THE NATURAL SOURCES OF THEOLOGY.

THOMAS HILL.

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A STATEMENT

OF THE

NATURAL SOURCES OF THEOLOGY;

WITH A

DISCUSSION OF THEIR VALIDITY,

AND OF

MODERN SCEPTICAL OBJECTIONS;

TO WHICH IS ADDED AN ARTICLE ON THE

FIRST CHAPTER OF GENESIS.

BY

THOMAS HILL, D.D., LL.D.

MEADVILLE
THEOLOGICAL SCHOOL.

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THE

BIBLIOTHECA SACRA.

ARTICLE I.

THEOLOGY A POSSIBLE SCIENCE.

BY REV. THOMAS HILL, D.D., LL.D., FORMERLY PRESIDENT OF HARVARD COLLEGE.

THERE have been in all ages speculative men whose philosophy has led them to deny the possibility of the human reason attaining to any knowledge of God. Sometimes they have built on atheistic axioms and denied the existence of divine things; sometimes they have been devout believers, and have simply said that the revelations recorded in the Old Testament, and in the New, are the only possible sources of religious knowledge.

Some of the great men of France during the last century inclined strongly to the opinion that matter, and forces inherent in it, constitute the sum total of the universe. But the fact was forced upon their attention that in all nations and tribes of men there are religious ideas, more or less distinct; and also that religious opinions easily accepted by children, cling with extreme tenacity to the adult mind; so that they themselves could with the greatest difficulty shake off the belief of their childhood. They attempted to account for these ideas by declaring them the product of the imagination, stimulated by terror at the manifestation of the destructive forces of nature. This ascription of the origin of religion to terror could have been founded upon only a very

careless survey of human nature. It is quite true that fear, or terror, frequently develops religious feeling; but it does not create religious ideas; and faith in God is frequently clearest and strongest in souls that have, through that faith, become entirely devoid of fear. This French theory is now abandoned, even by those who hold to the materialistic philosophy, and it is admitted that terror is as apt to destroy all faith as to develop it.

In the first half of the present century Auguste Comte published his system of Positive Philosophy. It has found few disciples; and the vagaries of Comte's later years, when he became, as sober English sense would declare, insane in his worship of mankind in general, and women in particular, have weakened very much the direct power of his name. Yet his writings at one time exerted a great influence; and some of the clearest English and French writers of our day owe to him, indirectly, more than they, perhaps are, themselves aware.

Comte's view of religious ideas is that they are an illusion of childhood, outgrown under proper education; and replaced, at first by metaphysical notions concerning physical causes, afterward by an entire suspension of judgment in regard to all questions concerning the origin, or causes, of phenomena. Sensible phenomena themselves are, in his philosophy, the only known, or knowable, things; and he pushes this doctrine so far as, in one direction, to make the mathematics merely an experimental science of measurement; and, in another, to forbid astronomy to meddle with the motions of the fixed stars, — because that motion is not sensible to the unaided eye. Things manifest to the senses are the only proper objects of human thought, and the only possible materials of knowledge. The sole work of science is, therefore, to group observations in such wise as to record them in the briefest possible formulae; the accuracy of which is to be tested by seeing whether they embrace also phenomena afterwards observed.

According to Comte's pure doctrine, therefore, he and his

followers are debarred from either affirming or denying any thing concerning spiritual and religious matters. They must hold their judgment in perfect suspense on such points, with supreme and unaffected indifference. It is manifest that this is an impossible feat, considering the vital interest of the questions; it would be holding the mind in unstable equilibrium, amid strong contending forces. The positive philosophy is, therefore, a merely ideal state, in which the author of the scheme could never have remained longer than a few minutes at a time. And, in fact, we find in his first great book, in which the doctrine is expanded, that he is greatly inconsistent with his principles; instead of leaving spiritual and theological opinions to themselves, as unproved and unprovable, he, in several places, attacks them warmly, and endeavors to disprove them; that is, not only to show that a theologian cannot prove the existence of the soul, and of its Creator; but that he, Comte, can prove their non-existence. In this attempt to prove a negative, and the negative of a proposition which, according to his own doctrine, transcends the possibilities of knowledge, he makes, of course, a very sorry display of logic. His proof of the non-existence of the soul is simply this: The body perishes when food, light, and heat are furnished in excess, or too scantily; therefore the body is moved solely by material forces, and a soul is superfluous. By this argument he forsakes his positive ground, to enter the theological, and to emerge in the metaphysical. But his attempts illustrate the impossibility of his holding his mind in the attitude demanded by his philosophy — the attitude of supreme indifference. If the master thus fails, the disciple cannot hope to succeed. Every attempt, like that of the positive philosophy, to ignore theology, will end either in a dogmatic atheism, or in a return to some form of faith.

The validity of religious knowledge is, at the present day, assailed on the ground that man is a finite being, that his faculties cannot lay hold of the infinite, that his thought is necessarily limited, is possible only within narrow conditions, and that the attributes of the Infinite and Absolute Cause of

the universe must forever be unknown and unknowable. Sir William Hamilton, of Edinburgh, a devout Christian believer, has had a large influence in making these assaults possible, by furnishing some of the metaphysical weapons employed in them. In the thirty-eighth lecture of his posthumous volume on metaphysics he announces what he calls the Law of the Conditioned. His language is this: "All that is conceivable in thought lies between two extremes, which, as contradictory of each other, cannot both be true; but of which, as mutual contradictories, one must." He illustrates this by space. "It is plain," he says, "that space must either be bounded or not bounded." "But though space must be necessarily either finite or infinite, we are able to conceive the possibility neither of its finitude nor of its infinity." He afterwards says, "We have found the maximum of space incomprehensible; can we comprehend its minimum? This is equally impossible." "Let us take a portion of space however small, we can never conceive it as the smallest," and "we can as little represent to ourselves the possibility of an infinite divisibility of any extended entity." Speaking of the like puzzle concerning time, he adds: "One is necessarily true, but neither can be conceived possible." In this connection Hamilton alludes to the famous arguments of Zeno, to disprove the possibility of motion; calling them, "arguments which, at least, show that motion, however certain as a fact, cannot be conceived possible, as it involves a contradiction."

Further on, he recapitulates thus: "The sum, therefore, of what I have now stated is, that the conditioned is that which is alone conceivable or cogitable; the unconditioned that which is inconceivable or uncogitable. The conditioned, or the thinkable, lies between two extremes or poles; and these extremes or poles are each of them unconditioned, each of them inconceivable, each of them exclusive or contradictory of the other." "One of these poles is the absolute, the other the infinite, and each can be conceived as a negation of the thinkable. In other words, of the absolute and of the infinite we have no conception at all."

Sir William Hamilton maintains that this is the orthodox doctrine. "We must believe," he says, "in the infinity of God, but the Infinite God cannot by us be comprehended or conceived. We know God according to the finitude of our faculties, but we believe much that we are incompetent properly to know." Once more, he objects to those who say that although the infinite is not comprehended, it is apprehended; this he thinks is absurd, it is saying that the infinite can be known, but only known as finite.

It will be observed that this great metaphysician devoutly recognizes the existence of the Infinite God; but claims that recognition as an act of faith or belief, not of knowledge. We must believe, he says, in the infinity of God; we know him according to the finitude of our faculties; but we believe much that we are incompetent to know.

Hamilton himself, therefore, did not deduce irreligious or atheistic corollaries from his law of the conditioned; and in his strong assertion that the infinite is inconceivable and unthinkable, he could only have meant that the mind forms no concept or image of the infinite. That he did not mean to say that the existence of the infinite is inconceivable, is apparent from his own statement that we must believe in the infinity of God. His doctrine of the inconceivability of the infinite no more stood in the way of his recognition of the existence of the infinite than his assertion of the inconceivability of the possibility of motion stood in the way of his acknowledging the fact of motion. As, however, Hamilton states and expands his law, and applies it in a subsequent lecture to the doctrine of causality, the law seems to be very defective and incomplete.

Let us begin, as our author does, with space. Universal space must be either bounded or unbounded. We can form no conception of space bounded — space absolute, without space outside of it. Neither can we form any conception of space infinite, however much we expand our conception of space indefinite. But what is meant by saying that between these two poles, space absolute and space infinite, both un-

thinkable, lies space thinkable? Or, take the other extreme. We cannot conceive of an absolute minimum of space, neither can we conceive of an infinite subdivision of space. But what is meant by saying that between these two poles of an absolutely infinitesimal infinitesimal, and an infinitely infinitesimal infinitesimal, both unthinkable, lies the thinkable of space? Had Hamilton lived to revise his work, he must have modified in some way his annunciation of his law. From the examples of space and time, he seems rather to have meant: That the thinkable lies between two unthinkable extremes; that each of these extremes consists of two poles, the absolute, which is unthinkable, and the infinite or infinitesimal, also unthinkable; but that one of each of these pairs of unthinkables must be true — our choice at each extreme lies between two unthinkables.

Our distinguished author is somewhat unguarded, also, in saying that the absolute and the infinite are equally unthinkable. Take, for example, the minimum of space. The absolute minimum is unthinkable, not merely because you can form no picture or concept of it, but also because you perceive that it belongs to the nature of space to be susceptible of division. On the other hand, the result of an infinite subdivision of space is unthinkable only because we can form no picture or image of the operation. Yet the imagination can start a process of division which reason can demonstrate would accomplish the infinite subdivision. Uniform motion, for example, is constantly performing it. A locomotive, let us say, is running at the rate of twenty-two and a half miles an hour. It passes a mile-post, and is distant one mile from the next. In eighty seconds it is but half a mile distant; in forty seconds more, it is a quarter of a mile distant; in twenty seconds more, only an eighth of a mile; in ten seconds more, only twenty rods; in five seconds more, it is only ten rods from the next mile-post. Thus, the distance before the next post is continually halved, and each halving occupies but half the time of the preceding. Hence the next five seconds will accomplish the infinite subdivision

both of the space and of the time, and the infinitesimal portion of each will be zero. And here arises a new contradiction to illustrate Hamilton's main thought — the contradiction that an infinite addition of these nothings makes somethings, viz. a mile, and two minutes forty seconds.

The infinite divisibility of space, therefore, although not conceivable in the imagination as a completed picture, is conceivable as the result of a clearly conceived mode of subdivision. As regards this pair of poles, the infinite is not inconceivable in the same sense as the absolute.

Let us glance at the other pair. Absolute space — space bounded and finished, without space outside of it — is inconceivable in every sense; while infinite space is inconceivable only in the sense that it cannot be imaged; it is not inconceivable that space is infinite; the intellect, indeed, accepts its infinity from the inconceivability of space absolute. The attempted concept of the absolute in space, whether minimum or maximum is a positive shock to the imagination; its inconceivability is glaring to the mental eye. But the attempt to form a concept of the infinite and the infinitesimal gives no such shock, but only a sense of the weakness of our powers.

When Hamilton approaches the question of liberty and necessity, he introduces, apparently unconsciously, another modification of his law of the conditioned. In his statements of the law, as quoted above, he makes the law of noncontradiction supreme. Space is, he says, either bounded or not bounded; you cannot call it both. All that is conceivable lies between two contradictories, both unthinkable; one of which must be true, the other must be false. But in the matter of liberty and necessity, he affirms both of two contradictories; he therein only follows the geometers, who, in dealing with infinites and infinitesimals, frequently affirm both of two contradictories, and are led by each affirmation to correct results.

Hamilton's Law of the Conditioned, in the form given above in his own words, seems not altogether intelligible

The subject is abstruse, and an attempt to give the wider and more accurate generalization, of which his is but a part, may be an equal failure.

We, embosomed in the infinite, are ourselves finite. Every faculty and function, corporeal, intellectual, spiritual, is limited in its sphere — bounded on all sides by the infinitely great or the infinitely small. By the ingenuity of the imagination and the skill of the intellect, we may enlarge to a certain extent the boundaries of our finitude; but we at length meet the inevitable barrier. Take the eye, as an illustration, in its range of focal adjustment; it can see distinctly, only when the given object is neither too near nor too distant. By ingenious devices we extend its range to greater distances by the telescope, and to closer examination by the microscope; but we can see that only which is within the reach of these instruments, which have limits as fixed as those of the eye. Analogous limitations hedge in each of the senses and bodily functions; and such limitations restrain also the incorporeal powers.

Take, as an illustration, the purely intellectual perception of form in space. The native powers of the mind are competent to discuss sundry finite relations of space, of distance, and direction; and out of this native power a sort of natural geometry springs by which men guide themselves in all their ordinary dealings with matter and motion. Then (by ingenious devices of the intellect and of the imagination) the notation or written language of the mathematics, in its simpler and antique forms, or in the more subtile and powerful forms of modern days, is brought to aid our investigation. We thus see more clearly the relations of finite space; but we also, through these intellectual lenses, see the indefinitely small and the indefinitely large, and learn truths which hold for the infinite and the infinitesimal. Neither the infinitely large nor the infinitely small is brought under our power of conception; but in certain cases the relations between infinites or infinitesimals are completely within the power of our reason, and the results of those relations completely

within the grasp of our imagination; as was just shown in the division of space by a uniform motion.

The general rule for proceeding in cases of the infinite or infinitesimal, may, perhaps, be thus stated. Starting with finite quantities we obtain some general formula expressing their relation; then, in that general formula, we suppose one or more of the quantities to become zero, or infinity. If this makes the formula become infinite, or of indeterminate value, the result which we have attained may be merely negative and useless. But if the formula remains determinate and finite, then our result gives us a positive knowledge of the relations of infinites or infinitesimals. We cannot begin with the infinite and reason to the finite; nor can we through the indefinite proceed from the finite to the infinite; but we can proceed from the relations of finites to the relations of infinites.

What is thus true of space, the simplest of all objects of intellectual perception, holds true, in its degree, with regard to higher objects. The infinite and the infinitesimal cannot be brought into the sphere of direct conception; but distinctly conceived relations between finites are frequently traced into the indefinite, in such a manner that we can show that the relations will still hold in the infinite; and sometimes that the result of those relations, even in the infinite, is finite and conceivable.

For this purpose peculiar canons of logic are brought into play. The ordinary syllogistic test must fail whenever we approach the infinite, in either direction, magnitude or "parvitude." The syllogism requires some relation of quantity between the subject and its predicate, but that relation is wanting when the subject is infinite. Propositions concerning the infinite require a special analysis in order to determine how much of their apparent meaning is real and trustworthy. This especial analysis for the determination of indeterminates, starts with a better meaning of the term infinite than that assigned by Hamilton. The infinite is not merely the negation of limits; it is the affirmation of extent beyond

limits. The infinite in space, for example, is not simply boundlessness, but boundless space. It is not the simple inability to assign a stopping place; it is an ability always to go further; as much further, always, as you please. This is one error of the Edinburgh master and of his disciples, they look at the negative side of infinity and forget the positive; and thus ascribe the notion to our weakness and not to our strength. Herbert Spencer, who yields far too much to the doctrine of Hamilton, nevertheless points out this error with admirable clearness. Even the closer followers of the doctrine of the conditioned betray, however, at every step in their discussion of the infinite, a dim perception that there is a positive side to infinity. It is not merely our inability to grasp the infinite, which marks the nature of our attempt to conceive it; that would indeed come from our finitude and leave us nothing to say concerning the infinite. Such may be the condition of an idiot, or of the lower animals. But when running through the indefinite, we not only see that we cannot reach the infinite; we see that we can run through the indefinite, as long as we please.

Now this is as true of spiritual things as of geometrical. Take, as an example, this very form of intellectual power, the ability to see the relations of space. If we attempt to rise from the contemplation of the merest instinctive power to move in a straight line toward a desired object, up through various grades of geometrical power, to the highest mathematician; if we then attempt to rise to the conception of cherubim, excelling, in this geometric ability, Hamilton of Dublin, as far as he excelled Hamilton of Edinburgh; we see not only that this will never bring us to the conception of that Infinite Intellect which comprehends all the movements and forms of the universe, as but a fragment of his knowledge; but also what is, one might almost say, more important, we see that we can always be extending our own knowledge of the laws of space, and always forming clearer conceptions of still higher geometrical power. This is a positive approach toward that unattainable end, the conception of infinite geo-

metrical knowledge. We can form no conception of such infinite knowledge; yet we believe in its existence, and can form a definite conception of its relation to other infinites; we can see, for example, that to such knowledge all problems not in their own nature insoluble have been solved from all eternity. And this is no negative fruit of weakness, but a positive fruit of power; a power that prophesies never-ending growth for the human mind.

Our faculties, being finite, must find their only field in the finite; and in finite results of the relations of the infinites; we can relieve ourselves of the indeterminateness of infinites, if at all, only by a peculiar analysis, starting from the positive, not the negative side of infinity. It may also happen, when infinity is in question, that two apparently contradictory and mutually exclusive propositions are both true; we can by peculiar analysis, demonstrate the truth of each, and yet be unable to conceive of the mode of their reconciliation.

As an illustration of this last point, it is easy to demonstrate that a curve bends at every point, and does not bend at any point; these mutually contradictory propositions are both true, and each is fruitful of sound results. Or we may take an example of the infinitely large; the hyperbolic spiral starts in the axis, and yet starts in the asymptote, and these two straight lines are parallel, and at any distance apart. Hamilton gives us a spiritual example; he believes in free-will in man, and in the foreknowledge of God; the mathematicians, as we have just shown, cannot consistently charge him with absurdity in so doing. Hamilton accomplishes the practical reconciliation of these apparent contradictories by remanding them both, out of the sphere of reason into the sphere of faith; just as his great leader, Kant (whose antinomies of reason probably suggested the law of the conditioned), referred the ideas of God, freedom and immortality, which he thought could not be established by pure reason, to the sphere of the practical reason.

But this distinction, which Kant and Hamilton draw, between faith and practical reason on the one hand, and

pure reason or the cognitive faculty on the other, cannot be maintained. It is in the subject-matter of our thought that the real distinction lies; not in the faculty by which we apprehend it. Moreover, the antinomies into which we run in approaching the infinite, or other walls of mystery which limit our sphere of clearer thought, are in no case so near as it at first sight appears. The same power which has approached them in one case, and won new fields for the domain of science from lands formerly supposed to be without the wall, finds them receding in all other directions before a fearless but reverent step.

In the pure mathematics these limits of the imagination are three, — the infinitely small, the infinitely large, and the imaginary, — the word imaginary, in mathematics, signifying a third unimaginable. By the skill of analysts all forms of this third unimaginable in space and time, that is in pure mathematics, are reduced to one, which may be illustrated in two ways: first, as a time which not coinciding with a given epoch, is yet neither before nor after it; secondly, as a point, which not being in a given plane, is yet on neither side of it. The metaphysician has not thus analyzed the forms of absurdity or inconceivability, in other departments of thought, but it is manifest that the infinites enter to bewilder other students than those of geometry.

Our nature is not wholly finite, we cling to the infinite in all our affections; and even reason inevitably leads us to perceive that there is an infinite. It is true that we cannot deduce the existence of the infinite by syllogistic inference from data given in our finite consciousness. Yet some of the very philosophers who, like Kant and Hamilton, have most strongly asserted the impotence of reason to demonstrate the being of God, have nevertheless clung most strongly to their faith in God. They assert the impossibility of conceiving the infinite, yet they cling to their belief in the infinity of space, the eternity of time, and an Infinite Personality as the first cause of all; a triplet of contradictions. Why this ineradicable belief? Not from the weak-

ness of our intellect, but from its power; it is because we not only see no limit to being, but see that there is no limit; that there is being beyond every limit.

The mathematicians in their dealing with the infinite have learned, not only theoretically but practically, that when infinity appears in the premises no finite conclusion can be drawn. They invariably conduct their reasoning on finites, and the relations of finites; and afterwards substituting the infinite for the finite in the results, find finite relations between the infinites. But the metaphysicians dealing with ontological problems have seldom attained this practical wisdom. From the days of Plato down to the latest philosopher of our own century, the metaphysicians of every school, religious and irreligious, have been apt to start with axioms and definitions concerning the infinite or the inconceivable, and to deduce by syllogistic reasoning important parts of their systems. This process has naturally and inevitably led to inconsistent, clashing results. Each system of metaphysics has embraced truths and falsehoods, which no man has succeeded in separating; because every man has proceeded, more or less frequently and constantly, on the wrong method, attempting to deduce finite consequences from infinite premises; arguing from the infinite, and not toward it. The example of the geometers ought by this time to have taught them that, while we can go through indefinites towards infinites, we cannot retrace our steps.

The metaphysician says that the march through indefinites can never reach the infinite. But that is an error. The march through indefinites can reach the infinite, provided the march be always at an accelerating pace. And although we cannot conceive the infinite, as such, we can conceive, and conceive correctly, the result of this attainment of the infinite, when the result is finite. Nor is it impossible that we should thus get at two finite results, each true, and yet contradictories; their infinite distance preventing us from reconciling them; in which case we must accept both, in spite of their apparent contradiction.

This is unquestionably true in mathematics, and true also in metaphysics. Philosophers frequently prove, in a perfectly satisfactory way, each of two contradictory theorems. If we should take these questions up from their finite sides, looking, as Lessing says, to the key of common sense to see what answers we ought to get to the problems, we might, by peculiar processes of investigation, remove the indeterminateness of some, explain the contradictory nature of others, and thus increase the field of certainty. Some of those questions which we did not thus settle, we might demonstrate to be in their nature insoluble; as the mathematicians have shown for the extraction of surd roots, and the squaring of the circle; or in their nature unimaginable, like time neither before nor after a given epoch; and thus we should remove them from the sphere of controversy.

Kant's distinction between the pure and the practical reason, Hamilton's between the cognitive faculties and faith, Mansel's between speculative and regulative truths, are all untenable. The two sets of our faculties and the two sets of truths, thus distinguished, are substantially one, and their separation is an uncalled for concession to that school of philosophers who would bound our knowledge by that which can be logically deduced from the testimony of the senses. Time and space lie as distinctly out of the sphere of sensation as any spiritual entities can; and if we resist Comte's definition of the mathematics (degrading them, as Cicero complained that the Romans did, to the mere art of measuring), if we show that this definition cannot account for the action of the human mind, nor explain the triumphs of either ancient or modern geometers; we may also resist Mill's definition of the mind as a congeries of the possibilities of sensation, and Spencer's as the state of consciousness, and Spinoza's as the sum of our thoughts; show that such definitions cramp and pervert both psychology and ontology; and refuse to make the smallest concession to any philosophy that would make mind a mere modification of matter. The idealistic extreme were far more rational.

The fundamental power of the mind is its power of perception; its power of recognizing objects of thought and thinking about them. The science of logic explaining certain of the processes of thinking, does not and cannot offer any explanation of the fact of perception. What I see, I must believe that I see; and my only power of criticism, is the power to separate clearly the perception from the related or dependent truths which I may by unconscious and rapid inference (i.e. perception of relation), have drawn from it. The objects of direct perception may be divided into five classes: the first containing time and space; the second, the external world; the third, our fellow men; the fourth, our own internal sphere of consciousness; and the fifth, the ineffable First Cause. Our perceptions of these five objects differ in clearness; and in the fruitfulness of inferences which may be drawn from them; but it is, so to speak, the same mental power of sight which reveals to us each of the five classes of objects, and it is the same power of seeing relations that draws its inferences from what is seen in the objects. Theology stands on a different basis from physics, because its object, or subject-matter is different, rather than because it requires the exercise of different powers of mind in its treatment.

We see space and time by the mental eye, and recognize their relations to us, and ours to them. We deduce magnificently long trains of successful argument from these perceptions; but we find also mysteries absolutely insoluble, even in these simplest of all objects; we are forced to confess after all our ingenuity in inventing calculuses, that we are, even in geometry, fenced in by an impenetrable wall of the unknowable. Not on that account do we consider the acquisition of geometrical knowledge impossible. But precisely the same is true concerning each one of the five great fields open to human sight, including the grandest and most sublime, that of theology.

We see that there is, ever present, a Divine Cause of all things, and cannot refuse to see it. We recognize our re-

lations to him, and his to us, and draw the most sublime and cheering inferences from them. If it is replied that he is both infinite and absolute, and cannot stand related, the answer is obvious; that objection argues from the infinite to the finite, and cannot be sound; it would be justly parodied by saying that space is indivisible and infinite, and cannot therefore stand related, and cannot furnish a basis for geometry. It is true that the mysteries of the Divine Being transcend all our powers of reason and of imagination. But this does not render all knowledge of him impossible, so long as we perceive his presence and action ever about us, and may even reverently and gratefully say we see him, ever present in our souls and in the world.

Mansel, in his admirable Bampton Lectures, states with wonderful clearness and force the impossibility of our attaining to an exhaustive knowledge of God; but he not only draws from this feebleness of our faculties the just inference that we are to approach religious reasonings with great caution and modesty; he also, in several passages, seems to deny our ability to judge at all of divine things, or to attribute any meaning whatever to the terms in which God is described as holy, just, merciful, and true. In his desire, apparently, to exalt the value of revealed religion, he, in these passages, destroys his power to accept the evidences of revealed religion. If we have no knowledge whatever of God, except through the scriptures, how can we judge whether the scriptures came from God?

Herbert Spencer quotes with approval both Hamilton's and Mansel's statements of the impossibility of man's arriving at the knowledge of divine things, but draws from the doctrine very different conclusions from theirs. As before remarked, he points out the error of supposing that the infinite is simply the not finite, the unthinkable in magnitude or finitude. He shows that we have not merely the negative notion of "without bounds"; but the positive notion of "something without bounds"; that the idea of the infinite is the result, therefore, not of weakness, but of strength. Further, he

attempts to show that the Ultimate Infinite, the Cause of the universe, although necessarily conceived as existent, is, nevertheless, in every one of its attributes, totally inconceivable and unknowable. This he declares to be the final result, both in science and religion; both come to the acknowledgement of an utterly inscrutable and unknowable origin of all things. Religion, according to him, is the feeling of awe and mystery awakened by our having the presence of the unknowable constantly pressed upon our recognition. Science is the knowledge which leads up to and defines the limits separating the knowable from the unknowable. He speaks quite sharply of those who predicate personality of the first cause, and asks whether there may not be a mode of being as much transcending intelligence and will as these transcend mechanical motion. The ultimate cause, he says, cannot be in any respect conceived by us, because it is in every respect greater than we can conceive. Therefore, he concludes, we must refrain from assigning to it any attribute whatever; because any attribute conceivable by us would degrade the ultimate cause. And this position, Spencer declares is that religious position which is most religious.

Yet this position is inconsistent with the fundamental postulates of Herbert Spencer's own philosophy; inconsistent also with the principles by which he proves, against Mansel and Hamilton, that our idea of the infinite involves a positive side, an affirmative of existence. Moreover, this doctrine of Spencer, like Comte's Positive Philosophy, asks us to hold the mind in unstable equilibrium, always believing in the existence of a being, to which indeed our attention is perpetually directed, but to which we cannot, and must not, assign any attribute whatever. Compliance with this commandment is simply impossible. I know beings only through their attributes; I recognize their being only through the recognition of their attributes; and cannot, therefore, recognize the existence of the Ultimate Cause, except by his attributes.

After reading this impossible and self-contradictory demand

of Spencer, we can bear with equanimity the pitying and condescending tone in which he informs us that our culture has probably not been sufficient to enable us to accept the great truth which he has revealed. His doctrine of the unknowable, his doctrine of the nature of the ego, and of volition, all contradict what he himself calls the universal postulate. Any belief that invariably exists in the mind, that you cannot by any effort of the imagination, even for a moment, suppose to be false, that belief is true. This is Spencer's universal postulate. And he not only admits, but strongly maintains that the existence of the ultimate cause is avouched to us by this canon. Yet he says that we must assign to this cause no attribute whatever. But this is impossible; we cannot, by any act of the imagination, even for one moment, conceive of the existence of a being, except by conceiving it with attributes; the existence is conceived only by the conception of the attributes. You cannot for one instant divest yourself of the belief that the Ultimate Cause of the universe is a cause; and that is the assigning to it of the attribute of power, of causal energy.

Moreover, it is impossible for a cultivated man, like Spencer, who has by education learned to distinguish what he sees, — it is impossible for him to behold the rational, intelligible, and beneficent order of the universe, and not attribute intelligence and benevolence to the Ultimate Cause. He deceives himself with words when he says that he can. He betrays, in many passages of his writings, his ineradicable faith that there is no vice in the constitution of things, that every thing is in the process of harmonious evolution, that all things work together for good to those who surrender the private to the universal. His very law of evolution, which his over-enthusiastic friends think the greatest utterance of human language, is an implicit announcement of the presence of thought and beneficence in every part of the universe in every geologic age. And, without reference to Spencer's law, every student of natural science acts upon a steadfast faith that the operations of nature follow a rational, intel-

ligible, order; he cannot, even momentarily, divest himself of this faith; and this is equivalent to saying that he cannot divest himself of the belief that the Ultimate Cause of nature is intelligent. When Spencer supposes that he has done so, it is simply because he has fastened on the finite side of our conceptions of intelligence; and he very properly refuses to assign the limitations, and deficiencies of human intelligence to the Infinite Creator. But his doctrine of the unknowable is an unwarranted inference from propositions concerning the infinite, doubly unwarranted; first, because it is illogically drawn; secondly, because his premises contain the infinite; and we can never reason to finite conclusions from infinite premises. Whether the eye was made for seeing, whether the rose was made to please man, these are finite questions, and no conclusion on these questions can be reached by starting from a consideration of the infinite. On the other hand, relations which hold in the finite, may, from the law of their changes as their relatives pass through the indefinite, be proved to hold in the infinite. The ultimate source of all, infinite, eternal, unbounded, may then be unknowable; while yet there are innumerable truths concerning him, accessible to man without recourse to revelation. *Τὰ γὰρ ἀόρατα Αὐτοῦ ἀπὸ κτίσεως κόσμου τοῖς ποιήμασι νοούμενα καθορᾶται, ἥ τε ἀΐδιος Αὐτοῦ δύναμις καὶ θειότης.*

When St. Paul declares that the invisible power and divine attributes of God are clearly seen, he announces what we understand to be sound philosophy in regard to intuitions; he asserts the power of the soul to see, to recognize the presence of beings around us. Two theories concerning intuitions have, at different times, exerted a retarding influence upon philosophy. The first was that of innate ideas; the doctrine that we are born with knowledge, an error arising it is said, first from a misinterpretation of Plato, confounding perception with imagination, and making both wholly subjective phenomena; this error was warmly attacked by Locke. The second and more important theory is that of Kant's forms of thought, which has been vigorously controverted

by Herbert Spencer in his first principles of psychology. But after confuting the views of the Kantians, Spencer falls into an opposite error. His discussion relates only to the intuitions of space and time, which many transcendentalists, from a misinterpretation, it is said, of Kant, assert to be not the perception of realities outside the mind, but simply forms given by the mind to external realities revealed by experience. Spencer shows very clearly that space and time do not belong to the mind, but to the external universe; proving his thesis by metaphysical argument, and by psychological induction. But he immediately rushes into the error of Comte, concluding that space is an attribute of matter, "the relation of coexistence," and time is the "relativity of position among the states of consciousness," that is sequence of thoughts. Thus space would be confounded with extension, and time with duration; errors as mischievous as those of the transcendentalists. The empiric philosophy of the Latin race, leading them thus to confound space with extension, destroyed their interest in geometry; not a single mathematician and scarce one physicist, appears in the annals of Rome, from her foundation to her fall.

The intuitions are true acts of perception by the soul; the most satisfactory simplicity and truthfulness is given to our philosophy by thus enlarging the field of perception until it embraces all cognizable existence. This may be illustrated by this very example, the intuition of space.

To assert, with some of the transcendentalists, that space is a form of thought imposed by the mind upon the universe, is a violation of Spencer's universal postulate, a contradiction of the common sense of mankind. For we cannot even for an instant imagine the possible non-existence of space. Kant himself, whose logical canon has been, it is said, misconstrued into the denial of the objective existence of space, certainly affirms the impossibility of the mind divesting itself, even momentarily, of its faith in the objective existence of space. On the other hand, to assert with the empiricists that space is mere co-existence of the parts of the universe, that it is

mere extension in matter, is equally a contradiction of common sense, and a violation of the universal postulate. For it is impossible to think space conditional on the existence of matter. It is difficult to believe matter infinitely extended, it is impossible to believe space otherwise. And if space be merely an attribute of matter, why is it impossible to imagine space annihilated? and why do we deem the truths of geometry necessary truths?

The empiricists would explain this sense of the necessary existence of space, by the uniformity of our experience. Spencer in adopting this line of argument, contradicts his own universal postulate. Moreover, the explanation explains nothing; how can uniformity of experience generate the conception of the necessity of the thing experienced? The extension of matter is no more uniform an experience than is its existence; and yet Spencer himself, says we can conceive of annihilating matter, but not of annihilating space.

But the third doctrine concerning space is the common sense idea, that space is space; not a form of our thought, nor a form of matter, but existing independently of our thoughts, and of the presence of matter; a simple, indefinable entity in whose infinite extension the finite extensions of matter are included; in whose eternal durations, the changes of the material world find their time of manifestation. Its existence is revealed to me by inward sight, just as the existence of an outward world is revealed to me by sense perceptions. I see space, that is the reason I believe it exists, and cannot with the transcendentalists make it a law of my own mind, nor with the empiricist make it an attribute of matter. I see it, and I see in it no other attributes than that of extension in three dimensions, upon which, and upon the abstract imagination of position, derived from matter, the science of geometry is built. I see space extending indefinitely in all directions; and can see no possibility of limiting it in any direction. Its simplicity and infinity and eternity relieve me from any necessity of supposing a cause for its existence; and I am entirely at a loss to imagine its

relations to the Ultimate Cause of the material and spiritual universe; other than this, that space is a field wherein that Cause has arranged the Kosmos.

We see space, but it is because the eye has been educated to see it; by a process which is so admirably described by Spencer, that it seems strange that he does not recognize its meaning. The eye is educated to see space, as the ear is educated to hear harmony. An untutored ear frequently fails to recognize harmonies, and hears only melodies; but the same ear, after cultivation, recognizes the relations of simultaneous tones with the greatest exactness. The physicist demonstrates that this perception of harmony is the perception of a really existent external fact. Thus also the metaphysician shall demonstrate that the perception of space attained by geometrical cultivation is the perception of a really existent entity about us.

This power of inward perception reveals to us other things than the existence of space and time. The clear sight of the invisible things of God, even his eternal power and godhead, is not by vision of the outward eye; but it is real, it is a direct inward vision of the divine attributes. Without some power in the soul to see what is divine, theology would be as impossible as a knowledge of painting is to the blind, or of music to those born deaf. No instruction can lead a man to receive and accept truths, unless he has, at least, some native capacity to see those truths. Of course, a man may believe more than he clearly understands, — there is some truth in Hamilton's saying, that the horizon of our faith is much wider than the horizon of our knowledge. We may even believe that a proposition is true when we do not understand it at all; but in that case we do not strictly believe in the proposition, but only in a proposition about it. Much more may we believe that a proposition is true, when in addition to believing that it embodies truth, we understand and believe a part of the truth which it embodies. But we cannot believe in the truth which it embodies, unless we see with our own vision, however dimly and partially, both the terms and the relation.

Yet we must acknowledge that the power is sometimes claimed of seeing that which is really non-existent; and also that it is rare to find an observer who knows what he sees, even with the outward eye. The outward eye sees with a power varying greatly in different men, according to natural gift, and according to education; so that the report which men give to themselves and to others, of what they have seen, agrees or disagrees with the thing seen, according to native and acquired differences in the sense, the imagination, and the judgment of the observer. If this be so, even with matters of outward sight, it is more emphatically true concerning the inward vision of divine things. Some persons see so dimly, and others are so unwilling to see, that they say, or even think, that they do not see at all; others think that they actually see that which they only infer from various data; others, through vividness of imagination, mistake visions for vision. Thus some declare all religion unreal, and make the soul merely the movement of the brain; and others declare themselves immediately conscious of immortality, and of the presence of God. Both these assertions are at first sight improbable. If religion were altogether unreal, it would be difficult to account for the universal prevalence of religious faith. If, on the other hand, man had immediate consciousness of God and of immortality, it were difficult to account for the frequent appearance of pantheism, atheism, and secularism. What then is the golden mean of truth between these extremes?

In sense-perception we are directly conscious of ourselves as recipients of an impression from without. The consciousness of perception thus gives us two beings — self, recognized as percipient; matter, recognized as causing sensation. This sensation may be greatly varied in its form, and thus give us varied information concerning its cause. The consciousness of the simplest sensation is also complex. I see vermilion. That act gives me my own existence, my power of sight, my power of distinguishing colors, my actual exercise of the power. It also gives the existence of something out-

side my consciousness, which awakens in me this perception of a brilliant red. Nor can any man doubt any of the truths thus given; he cannot doubt his own existence, he cannot doubt his power of sight, he cannot doubt the existence of something which he sees, nor doubt its power of making him think it red. Some realistic metaphysicians have been perplexed by the modern discoveries of the tardy motion of light; but the perplexity is needless. I see vermilion, and I see it is red; that testimony of my sight is true, whatever theory of light and colors stands or falls; whether in some other light it would or would not be of a different color; whether the vermilion is ten feet distant from me, and now existent, or ten diameters of the solar system and annihilated an hour ago: The eye does not testify to sulphide of mercury, but only to something external which is red; and that something may be merely undulations in the ether.

In this simple act of sense-perception there is also an inward perception, or intuition of cause. Whenever we perceive a change, in ourselves or in the world, we are constrained to believe in a cause of that change. That constraint comes from a direct intuition of power, as an entity. The outward sense sees the hammer strike the nail, and sees the nail sink under the blow. The inner sense sees that the nail could not sink without a cause. It sees also that the moving hammer contains power as the cause of its moving. Hence the inference is natural, that the power in the hammer is the cause of the motion of the nail. The inner sense also perceives the effect of the blow upon our own feelings, and upon our own attention. It is of no importance to the present argument to decide in which direction we first see causal energy, whether in our own volition or in the power of the external world to produce sensations in us, or in the action of matter upon matter; we at all events see, by a sharper sense than outward sense, the presence in the world of power, force, or causal energy. All changes within and without we see to demand a cause, and we are led to pursue the chain of causation backward, until we reach one Original Cause, without beginning and without need of cause.

This Herbert Spencer has shown, as clearly as any writer, is the inevitable end of speculation concerning causes; we must recognize an ultimate cause which is uncaused. This is the first direct vision of divine things; the soul attains it by patient attention to the chain of causes.

Here Herbert Spencer would have us end; he pronounces the ultimate cause to be not only unknown, but unknowable. But man sees, in his first act of sense-perception, two substances in action, himself and the outward world. He recognizes these two substances by entirely different attributes, one by its power to produce, the other by its power to perceive sensations. In higher acts of perception, he discovers new points of difference between himself and matter; each acts as a cause of motion, but he alone can guide motion to fulfil plans, gratify desires, obey volitions. Hence in speculating upon the causes of phenomena, he divides the causes into intelligent and non-intelligent; and thus at a very early period in his conscious life, recognizes the existence of his fellow-men.

Furthermore, when man looks upon the outward world, he is as much impressed with the likeness of nature to art, as with the likeness of art to nature. The forms of nature, also conform to ideal, intellectual patterns; the movements of nature accomplish beautiful and beneficent results. He thus perceives that even the forces of nature are obedient to intellect and to will; a higher intellect and will than the human. Now this is a direct perception, indistinct though it may be, of a divine truth; that the spirit of man has a likeness to the Infinite Spirit which moves the universe.

Theists, Pantheists, and Positivists will, however, join in attacking this position; they will warn us from ascribing personality to God; will perhaps assert that it is as degrading to the Infinite Being to ascribe to him the highest attributes of humanity, as it would be to assign to him our lower passions. Nevertheless, Paul was right, and we see, in contemplating the world, the Divine Personality, or spiritual nature of its Author.

In the Ultimate Cause of the universe must lie the power of producing motion in all its forms, else the universe would not contain motion. It is not degrading him to say that he is the source of the physical forces which move the world. The ultimate cause must also contain the power of arranging things according to intelligible plans, else the world would not be arranged in its complex and perfect harmony. Undoubtedly the Ultimate Cause transcends in his modes of being, all our possible conceptions of intelligence and will. Nevertheless, the intelligible and beneficent order of the Kosmos shows that those modes of the Divine Being include our highest conceptions of intelligence and goodness; and this is, of course, all that we can mean by saying that God is a Spirit and a Person. Spirit and matter are the only two entities with power, — substances, — given to us in consciousness, and we necessarily liken all other substances, including the Ultimate or First Cause, to one of these; and between these we cannot but choose spirit as the cause of matter, rather than matter as the cause of spirit; thought or intelligence is the most probable cause of the wonderful order of the universe.

In the simplest act of sense-perception is revealed also to us our freedom; we can attend to, or refuse to attend to, the sensation. In the process of our experience we find arising out of our sense of freedom a sense also of right and wrong. Probing this question of moral duty, to discover an ultimate test in distinguishing right from wrong, we find revealed to our inward vision, a moral order of the spiritual universe; as profound and as beautiful as the intelligible order of physical nature. The ultimate decision of a question of right, on which men hopelessly differ, we see must lie open to the intellect which planned the whole. This is a still higher vision of divine things; we see by direct vision the existence of right and wrong; we see that the difference between them is known to the intelligent First Cause.

Once more; in our simple act of sense-perception, substance is revealed as comparatively permanent; neither the percipient self, nor the thing perceived, is created by the per-

ception, nor annihilated by its cessation. The question of our own duration, our own permanence, is thus presented, and we find a shrinking from the thought of our own annihilation. Our thoughts rise to the contemplation of the Ultimate Cause of the universe, and we see that he must have been without beginning and shall be without end. Even Spencer, while saying that we must ascribe no attributes to the Ultimate Cause, pronounces that Cause to be eternal and omnipresent. Here then are glimpses of God's eternity and man's immortality.

Finally, we contemplate a man acting against his own conviction of right; and we irresistibly feel that sooner or later the right must be avenged; that a man thus acting is violating the conditions on which alone life is possible; that the order of the universe and the progress of events cannot allow permanent prosperity to a violator of the right. This sense of condemnation for sin, this faith in a coming retribution, arises from an intuitive vision of the justice of God, and is so ineradicable, so inextinguishable, that the failure of retribution in this life, so far from shaking our faith in that justice, only strengthens our faith in a hereafter for man.

However impossible, therefore, it may be for a finite creature to comprehend the Infinite Creator, it is nevertheless clear that man has a direct vision of some of the attributes of the Creator. We see his power, as the efficient cause of all phenomena; we see his wisdom displayed in the beautiful and marvellous order of creation; we see his love in the beneficent operation of natural laws; we see his holiness, his justice, his eternity, as well as glimpses of man's immortality, when we look directly at the relations of the soul to its Creator. These all bear the essential marks of direct vision, just as truly as sense-perceptions do. No keenness of analysis ever succeeded in explaining one of them as an inference from any simpler truth. Such analysis has frequently been attempted, especially by the empiric school; but when we examine their attempts, we find they omit from analysis, the essential point to be analyzed. They resolve cause into invari-

able sequences, omitting the notion of efficiency or power, the very thing to be considered. They resolve right into expediency; evading the very point why we distinguish so emphatically between the two. But the need of causal efficiency in an Eternal Being, to produce the transitory world; the need of intelligence in the creation and guidance of this goodly frame; the presence of divine love, in the adaptation of nature to human needs; the holinesss and justice ruling over human affairs; these are self-evident and necessary to the man who patiently, steadily looks at them; the very philosophers who have been led by vicious arguments from the infinite to attempt to deny them, nevertheless betray in unguarded moments their ineradicable faith in them. The self-evidence and necessity of these truths guarantees them to be truths of direct vision. In our power to see them lies the glory of our intellectual nature; in the power to see divine things; and it is the salvation of the soul, when, seeing divine truth, we seize it with the living and earnest grasp of faith. Herein lies the true distinction between reason and faith, whether in geometry or theology; reason sees and assents to truth; faith sees and consents, lays hold of the truth as a part of our own life. It is this ability to see and believe the things of God, which enables man to receive the revelation through the written and spoken word; and the higher the native ability of a man the greater the value of the revelation to him. It is in vain to give the best instruction in geometry to a student who is utterly deficient in mathematical power; but the best text-books and instruction are of most value to those who have the highest native genius, and who can appreciate their opportunities.

Thus also in theology; those whose vision of divine things is by nature clearest, and whose hearts are most nearly free from sin, are, in general, the very persons who most eagerly welcome, and most thoroughly profit by, the revelations made upon Mt. Sinai, and upon the mount of beatitudes, on the mount of transfiguration, on Calvary, and on Olivet. It is very difficult for us, brought up in the noonday of Christian

light, to decide how much we owe of our knowledge of God to the Teacher who spake as never man spake. We may err upon either side. We may overvalue our own ability, fail to recognize the light which flows from the divine word, and overrate our powers of unaided vision in discerning things that pertain to God. On the other hand, if we say that without Christ we have no knowledge of divine things, then we assert that man has no power to recognize the Christ; no test whereby to know that he came from God. But to fair-minded observers, whether believers in divine revelation or not, it is apparent that one of the strongest arguments in favor of admitting the royal claims of Jesus, is the wonderfully beautiful coincidence of every doctrine of his discourse, and every manifestation of his character, with our own conception of what is highest, most true, most worthy of the incarnate Word of God.

THE

BIBLIOTHECA SACRA.

ARTICLE I.

THE FOUNDATIONS OF THEOLOGY SURE.

BY THOMAS HILL, D.D. LL.D., FORMERLY PRESIDENT OF HARVARD COLLEGE.

It is difficult for us to distinguish between our most simple and direct inferences and the perceived facts on which we found them; and this difficulty is as real in the case of sensible as of supersensible objects. Nor is it always important for us to make the distinction; it is, in many cases, enough for us to feel the certainty of our knowledge or belief, and the reality of our emotions, without asking the grounds. As Catullus sings:

> "I hate, I love; you ask why this I do?
> My torture only tells me that 'tis true."

Sundry modern writers attempt to explain the instinctive desires and aversions on the ground of experience; Spencer calling in the experience of the ancestry to explain the fact that these desires and aversions are manifested at the very beginning of conscious life. The fact itself is patent to all observers, whether in animals or in new-born children. The appetites lead the animal directly, without tentation, to the actions which gratify them, very much as if the animal had an antecedent knowledge of the object, and of the gratification which would be yielded by its possession. In the child free to choose its mode of life the desire infallibly leads to the experience; and, although the knowledge is not innate,

it is what has been called inchoate; its foundations are in the soul, and it grows with our growth.

Among the native cravings of the human soul is the craving for sympathy, for human society, which seems to imply, and which certainly develops in the child, at a very early period, a knowledge of human beings, and of its own human nature. We know the existence of our fellow men with a certainty like that of intuition or of direct sight. We are certain of the existence of beings with a nature fundamentally identical with our own — with thoughts and feelings, desires and purposes, and with a power of will like unto ours. The ground on which we base our certainty might be assumed, by some persons, to be the cumulative probability in favor of the hypothesis which would explain such an indefinite number of facts in our experience. But a child, certainly, is never conscious of weighing the probabilities whether his father or mother, his brother or sister, exist; nor does the mature mind look at it in that light. We know, of course, that there is every probability in favor of the proposition; but we drop the question of probability, and know the existence of other men as certainly as we know our own.

This voice of authority within us is the unrecognized voice of the social instincts; its authority is recognized, but not its origin; that is, we do not here, any more than in other instances, argue consciously from the appetite to the existence of the object; yet it is the appetite that gives the intense faith in its desired object. Thus, also, our filial and our parental love, our craving for sympathy, our attachment to friends, our happiness at home, our gratitude to benefactors, our sense of justice, and other sentiments, give us, without conscious inference, a certainty in the existence of our fellow men — a certainty as immovable as that of our own existence.

In a perfectly analogous manner the religious sentiments give to the soul that is vividly conscious of them a certainty of the existence of the objects of that faith. The existence of the religious sentiment is acknowledged by nearly every

writer. Even Herbert Spencer, whose psychology is so inadequate to account for religious emotions, declares that contact for countless generations with the unknowable has produced a hereditary awe of the Ultimate Cause, so that men are now born with an aptitude for religious feeling, and that this native religious sentiment is ineradicable.

But this sentiment, which Spencer confesses to be, in this generation, inborn and of the highest value, cannot possibly have the form assigned to it by that ingenious writer, of a mere awe of the unknowable. The unknown and unknowable cannot excite awe, for it cannot affect our feelings in any manner — a conclusion which would not be affected by conceding Spencer and Maudesley's doctrine of the hereditary accretion of our mental and moral powers. What is wholly unknown and unknowable to the race cannot affect the consciousness of an individual. Were Spencer right in making all religious emotion consist in awe of the Ultimate Cause, that awe would not arise from the contemplation of the unknowable, but of the known. In recognizing the existence of a cause, we just so far know it as a cause. This is precisely the way in which we know all that is known — as the causes of phenomena; we know the causes in the effects. Spencer says that our belief in an omnipresent, eternal Cause of the universe has a higher warrant than any other belief, that is, that the existence of such a Cause is the most certain of all certainties; but asserts that we can assign to it no attributes whatever, that it is absolutely unknown and unknowable. Yet in his very statement of its existence, he assigns to the Ultimate Cause four attributes, viz. being, causal energy, omnipresence, and eternity. And afterwards he implicitly assigns to it two other attributes — repeatedly expressing his faith that the cosmos is obedient to law, and that this law is of beneficent result; which is an implicit ascription of wisdom and love to the Ultimate Cause. By his own principles, it could be shown readily that these six attributes are absolutely known attributes, and that, therefore the being of God, in the Jewish and Christian

sense of that sacred name, is the most certain of all certainties. For when we have arrived at the generalization that the whole universe is moving by intelligible law to the fulfilment of benevolent ends, it it impossible to refrain from assigning its origin to a Being Omnipresent, Eternal, Almighty, All-wise, and All-good. It has, indeed, taken a long course of culture, aided by the sublime word of Genesis, which Spencer ignorantly calls a Hebrew myth, to lead men to this clear perception of the presence of God in the creation; but this does not show that the idea is the mere product of culture. Some of the self-evident truths of mathematics have required thousands of years of the culture of mathematical genius to bring them now to light; yet they were true from before eternity.

The unknown and unknowable are matters of absolute indifference to us; we can be made to feel concerning the unknown only by giving us partial knowledge, and awaking the hope of further discovery. The instincts of reverence and adoration are not called into action, as Spencer falsely supposes, by contact with the unknowable, but by what is known, and particularly by sudden glimpses of the indefinite extent of the knowable. The most profound emotions of the sublime are always called out, as Goddard has shown, by a sudden perception of the vast field accessible to us, and never by the perception that a field is wholly inaccessible. Thus with the sublime attributes of the Deity; the more profound our knowledge of the rational, intelligible order of the universe, the higher will be our amazement at his boundless reach of thought; the more full our appreciation of the beneficence of his work, the deeper will be our gratitude for his ineffable goodness; and the clearer our conception of the moral order of the universe and of the righteousness of its compensations, the lowlier will be our adoration of his holiness.

When these emotions of adoring gratitude and wonder and praise are fully aroused in the soul, they give, without conscious inference on our part, a certainty to our knowledge

of God, such as is given by our social instincts to the knowledge of man; and we are right in saying, I know whom I have believed. It is incredible that the soul should have these sentiments of adoration and gratitude and love planted so deep within it, and that there should be no object to which they cling. The faith in the living God, which the soul aroused in its deepest religious nature feels, is well described by Herbert Spencer, in speaking of faith in a First Cause, as a belief having a higher warrant than any other belief whatever, the consciousness of which cannot be suppressed, without suppressing consciousness itself.

In every ordinary state of consciousness we know both ourselves as conscious, and the external world as producing some effect upon our consciousness. It is sometimes attempted to assume that consciousness is a state of the brain; but that is a notion which cannot be constructed. We know the brain only by its sensible properties. We know consciousness only in consciousness, and cannot in real thought predicate it of the brain. "It would be as practicable to imagine a round square."

In ourselves, in our conscious thought and feeling, we find the capability of indefinite expansion. Our thoughts rush ever in both directions, toward the infinitesimal and toward the infinite. In the mathematics it has been demonstrated that every function is completely determined by determining its infinite and its zero values; and in every department of thought a similar truth is assumed, so that we at once attempt the solution of the infinites. Even Spencer, who declares the infinite utterly unknowable, tells us, with glorious inconsistency, that the evolution now going on has gone on from eternity, and will go on to eternity; thus virtually saying that the secrets of the Infinite, although unknowable to man, are known by him. This is the unquenched spark of divine light within him, shining through his darkness, and not comprehended by his mistaken logic.

As the intellect thus ever seeks the infinite, and, in important senses, finds the infinite it seeks, so the heart yearns

for an infinite wisdom wherein to trust, an almighty arm whereon to lean, an unfathomable love wherein to rejoice No mortal counsel gives us entire confidence, no human sympathy supports us under every burden, no earthly love gives perfect peace to the heart; we trust in the guidance of the eternal Providence, we cast our burdens on the Lord, we rejoice in the fulness of the divine love. These glowing Christian affections are an unerring indication of the reality of the objects to which they cling, and of the immortality of the being in whom they exist. This yearning for the infinite shows an element of the infinite within us.

The empirics endeavor to show an unbroken series of psychologic states, from the highest saints and sages down to the lowest zoöphyte, and ask, where shall you draw the line? We answer that it is of comparatively little importance. It were more reasonable to admit the immortality of ascidians, about whose psychical state we know nothing, than to deny the immortality of man, concerning whose psychical state we know so much, and whom we find ever turning with heart and mind toward the infinite and the eternal, clinging with ever-strengthening hope and faith to the conviction that he is permitted to read a part of the thoughts of God expressed in the order of nature, to understand some of his purposes, to share in the warmth of his illimitable love. Even were the wild dream of a development of the human brain from the diffused nervous sensibility of an acephal true, it would not make any approach toward identifying the conscious self with the brain it uses; much less would it make any approach toward answering the questions suggested to us by these thoughts and affections which lay hold of the infinite. Experience gives us only the finite; imagination can build no more than the indefinite; but reason and affection overleap both experience and imagination, and cling to the eternal and the infinite with an earnestness which is a pledge to us both of the existence of God and of our relationship to him.

There are, doubtless, difficulties in the doctrine that men are made in the image of God. We have just alluded to

one, the difficulty, namely, of drawing any sharp distinction between the intellectual and moral attributes of the lowest men and of the highest animals. Another difficulty is found in the reflex action of the brain upon the mind. Our feelings and our judgment vary with our state of health, and we cannot draw any sharp line as the boundary of insanity. The phenomena of delirium, madness, and double consciousness are therefore appealed to as proof of the purely physical origin of thought.

A slight consideration of a special sense, as vision or hearing, may make this difficulty less formidable. In normal sight, the retina is excited by rays of light. In normal imagination of a visible thing the retina is affected by the imagination, and may in certain cases be so much affected as to cause a perception or vision of the thing imagined. But a third case arises, in which the excitement of the retina, from some other cause than the reception of light, causes impressions as of light and color, and then very faint and even unconscious imaginings may give definite form and circumscription to these impressions, thus making images or visions. When myself suffering, many years ago, from undue excitement of the optic nerve and the appearance of visions, I could in general account for the particular form of the vision by recalling what I had been looking at, or thinking of, just previous to the attack. Thus it may be in delirium and insanity. The cerebral excitement is doubtless from physical causes; but its form arises from the effort of the mind to control it; and it may be that a part of the organ obeys the mind more perfectly, a part less so, and thus arises the apparent double consciousness. The difficulties of the subject are great; but they are vastly greater on the purely material hypothesis, and less on the spiritual hypothesis.

We may not be able to decide whether the human mind spontaneously originates the idea of perfection, or whether the idea has come through the Mosaic and the Christian revelations. But, be that as it may, the moment that the idea of

perfection is presented to the human mind, we rush to the conclusion, and cannot be moved from it, that the Creator is perfect, that is, that nothing can, in imagination or reality, be added to his attributes or taken from them.

Of course, we can form only a rational or intellectual concept of perfection; not an image, or sensible concept. We may, with Erigena, say that the Deity is not wise, because he is more than wise, nor good, because he is above all goodness. We cannot say what he is, because he is more than all that we can say. It was in a spirit of the deepest reverence that Erigena added, "Deus ipse nescit quid ille sit, quia non est quid." Yet we know that the perfect knowledge must include all our knowledge, that the perfect love must be the fount of all earthly goodness, and the perfect holiness give us our inspirations of virtue. Herbert Spencer, refusing to assign attributes to the First Cause, still expresses his faith in the truthfulness, faithfulness, wisdom, and beneficence of the order of nature. The human mind which has once received the idea of moral perfection in God cannot free itself from that idea by any verbal quibbles concerning the infinite. We know that God is wise and good, in exact proportion as we know what wisdom and goodness are, since he embraces all perfections.

When we have arrived at the recognition of God's presence, and of his moral attributes, we long to speak to him, and cannot be content without thanksgiving, praise, and prayer. The reason, puzzled by the infinite character of the Deity, brings objections to these acts of piety, suggests that forgiveness is impossible, penalty inevitable, thanks and praise indifferent to the Infinite One, grace and mercy out of the power of an unchangeable and eternal Being. Still, the heart, when deeply moved, always sweeps away these objections of reason, bids her reconsider the problem, and be sure that God is our God. This testimony of the heart is surely of more weight than any of the flimsy deductions of pantheistic logic. There is nothing in sound reason to prevent the heart receiving the comforting assurance of that

word which was made flesh in Bethlehem, that God is our Father, ready to forgive our sins, and to help us in our weakness, upon the simple and reasonable conditions of turning from our sins, with faith in his holy Messenger.

Let us now turn to the objections urged against religious doctrines on account of what is called the relativity of knowledge. Every correct form of reasoning or inference may be described as essentially the same process. We start with two truths that are either absolutely self-evident, or else that are truths of conclusion previously established. From their self-evident relation arises a third proposition, which is the inference. Knowledge thus consists wholly of truths which are either self-evident, or connected with self-evident truths by self-evident steps.

But what truth is self-evident? The experiential school answer that we give the name self-evident to truths which we cannot, even for an instant, suppose untrue, and that this inability arises from a uniformity of experience in ourselves and in our ancestors; that, for example, we think two straight lines cannot inclose a space, because neither we nor our ancestors, from the days when they were zoöphytes, ever saw two straight lines inclose a space; an explanation which explains nothing, but merely covers the problem with words. Whatever is the object of direct sight, that is self-evident. Forms of matter are the objects of direct sensation; forms of spiritual truth and forms of space and time are the objects of direct intuition. What is thus seen by the inward or the outward sense is self-evident; we believe because we see.

But all human seeing is a partial seeing. The image in our mind is affected by many circumstances, by qualities not in the object, but in the medium, and in the subject, the seer. What is seen depends much upon him who sees; and this is one doctrine of the relativity of knowledge. Our knowledge bears a relation to ourselves, and is necessarily affected by our own state. All that we know, or can know, it is affirmed, is, how things look to us, not what they really

are. How much less, therefore, can our views of the Ultimate Cause of all have the faintest likeness to the object!

But space and time and number are conceived clearly in proportion to our ability and our culture; in other words, our knowledge of them is relative. Nevertheless, we have absolute knowledge of their properties — that the extension of space includes distance in manifold directions, and the protension of time points only to the future and to the past. Thus, also, in things visible, our senses never deceive us; we are deceived by our judgment, our reasoning, on the sensation, and, by sufficient care, we can correct our judgment. It is a vulgar error to suppose that those born blind have more acute hearing, and those born deaf sharper sight, than others; it is not that their senses are more sensitive, but that their judgment on their sensations has been more exercised, and is therefore better trained. Sense always gives a true report, and it is we who sometimes misinterpret the report. Of this liability to error we should not complain, since the pleasure of success always lies in the possibility of failure.

Thus, also, in spiritual things, our intuitions give us truth so far as they give us anything, and that truth is related as directly to the object of intuition as it is to us. We know the elements of psychology and theology positively, by direct intuition, and cannot suppose there is any uncertainty concerning them. But our inferences from these intuitions may be very far from correct, unless we have proceeded with cautious, sound judgment.

Our intuitions make us absolutely certain of the likeness of other men to ourselves; yet we may fall into gross misjudgments of men, unless we limit this truth of intuition by the observed truth that men also differ from us and from each other.

In arguing from truths of consciousness to the attributes of the Deity, we should, of course, be still more cautious. We see that there must be an Ultimate or First Cause, Almighty, Omnipresent, Eternal, Omniscient, Holy, Benefi-

cent, from whose attributes our own feebler powers and virtues by his inspiration spring. These grand truths are not subjective illusions; they are not the projection of our own likeness on the misty universe, and mistaken by us for the likeness of the Creator. The invariable and universal laws of nature, the expressions of the divine thought, were in nature, intelligible, rational, conforming to the *a priori* laws of space and time, countless ages before man's poor geometry and algebra partially deciphered them. Man is, then, the child of God; we know with absolute certainty that our minds, seeing the laws of space, have some likeness to his mind who subjected matter to those laws; and we believe with immovable faith that our hearts and souls partake in the same divine likeness. We are, however, to take heed lest we deserve the reproach which the Psalmist represents the Lord as uttering: "Thou thoughtest that I was altogether such a one as thyself."

But modern speculators on the infinite and the absolute, instead of reproving the wicked for thinking the Lord altogether such as they, reprove sharply the righteous for thinking that the best man can have any likeness to the Deity. It is as degrading to the Infinite Being, they tell us, to pronounce it spiritual, wise, or holy, as it is to pronounce it sensual, foolish, or wicked.

Yet wisdom, holiness, love, will, are positive powers, of which we can conceive indefinite increase, and to which we see no inevitable limit; while sensuality, folly, malice, sin, are in their own nature limited. We cannot conceive their indefinite expansion, for, if we imagine them increasing indefinitely, we see that they lead rapidly toward an utterly insane or idiotic condition of mind. The Satan of Milton, even the Mephistopheles of Goethe, have many fine qualities. Without this blending of goodness in the bad, the poet could not paint a devil, any more than the artist could produce a portrait, using only black pigment, upon a black ground.

While, therefore, no conception of the Infinite Cause can be adequate, and no human language can make a statement

concerning him that shall be wholly true, — that is, incapable of being misunderstood, — it is yet more emphatically true that no deductions from our definitions of the infinite and the absolute can be valid, unless by accident; and that the validity of such deductions as have been made by Kant, Hamilton, Mansel, and Herbert Spencer, from the nature of the infinite, are to be tested by the inductions of natural theology, rather than the inductions by such deductions. The only ground on which the validity of the inductions and intuitions of natural theology can be assailed is that of the relativity of knowledge; and to make the assault seem successful, the position of the assailant must be taken so far to the left as to leave him in utter and complete scepticism, doubting the axioms of mathematics, and uncertain of his own existence.

If we have any warrant for believing in our own existence, in the reality of space and time, in the certainty of their relations, in the existence of matter, in the certainty of its simplest laws, in the being of our fellow-men, or in their general likeness to us, then we have the same warrant for inferring some likeness in man to his Maker. The First Cause is not wholly inscrutable; and blended as our ideas of him may be with errors of our own, they must contain also something of his truth. Our ideas of God may not be as adequate as our ideas of space and time; but they contain truth concerning him, and concerning our relation to him. All thinkers concede that human reason is competent to discover the existence of an Ultimate Cause, to form the inductions of its Being, its Causal Energy or Power, its Omnipresence, and Eternity. Our warrant for these inductions is what Herbert Spencer calls his universal postulate. We cannot, even for an instant, imagine that there is not a Power which causes all things, everywhere and always acting.

All writers (if we except the eccentric pessimists) also concede that "there is no vice in the constitution of things" — that intelligible law rules throughout all the universe, —

to the furthest stars, in the minute intricacy of molecular structure, in the relation of part to part and of all parts to the whole, — precisely as if the whole universe, both of mind and matter, were the expression of mathematical, physical, and moral ideas. The human mind, seeing this perfect intelligibility of the effects, cannot refrain from assigning intelligence to the cause; seeing the rational order of all motion, cannot doubt that the movement is ultimately guided by reason. There is a necessity upon us of adding to the four attributes of Being, Power, Omnipresence, Eternity, that of Knowledge or Wisdom.

But, said a friend to us, "You have not tried long enough. The positive philosophy is still young. After sixty or seventy thousand years of effort to refrain from this teleological absurdity, we shall be able to refrain easily, and acknowledge the First Cause as wholly inscrutable." We reminded him that his supposition was invalidating the universal postulate of his idol. "Very well," he replied, "let it fall." Then everything falls; we are in chaos; we do not know our existence, nor that we doubt our existence; there is no argument for or against any truth whatever; the height of philosophy has become the height of folly. To suppose that what has been demonstrated as true to human thought to-day can be false to human thought in any future, is to deny the possibility of any knowledge of anything, now or hereafter.

Herbert Spencer himself brings to bear a different argument against teleological views. He says that the Infinite, Ultimate Cause is without the necessity of planning, deliberating, contriving; these are implied in thought; therefore we must not degrade the Ultimate Cause by attributing thought to it; that he calls a carpenter theory of creation. But this is a trebly unreasonable attempt of Spencer to invalidate an induction sanctioned by his universal postulate. He uses a contemptuous nickname, instead of argument; he assails an induction which by the universal postulate is as certain as an intuition; and he attempts to test it by deduc-

tions from the infinite — deductions that can be true only by accident, if true at all.

The fallacy of his argument may be shown by a parody of it. We only know a finite universe, finite in time and space; the universe cannot therefore be produced, as Spencer says it is, by an Infinite Ultimate Cause; for such a Cause could only produce infinite effects; it is degrading to an Infinite Cause to suppose it creating the finite world revealed to our microscopes and telescopes.

The same friend, an admirer of Herbert Spencer, who thought that we must try for sixty or seventy thousand years to make his absurdities seem sensible before we could pronounce them absurdities, furthermore thought that the intelligible order of the cosmos need not be attributed to an intelligent Ultimate Cause, but to intelligence in the atoms. In other words, after theology has painfully arrived, by thousands of years of culture, at a firm, intelligible monotheism, this friend wishes to leap back at one bound to a fetichism incomparably more confusing and inconceivable than any that ever entered the untaught mind. He would take Leibnitz's sublime and wonderful monadology; but, before accepting it, strike off the head of that marvellous hierarchy, and reduce it to chaos — a chaos in which, however, there is the marvellous order that each one of the innumerable atoms, or monads, is possessed of immeasurable wisdom, so that each guides itself by a law that embraces the action of the whole.

To recapitulate: Our knowledge must consist either of truths which are self-evident, the direct objects of sight, or of truths inferred from self-evident truths by self-evident steps of reasoning. By these processes of direct perception and of logical inference we have built up the mathematical and physical sciences, and made some advances in historical, political, and psychologic sciences. But when we attempt to proceed in precisely the same manner in theology, we are sometimes told that our labor will here be vain; that we cannot arrive at any knowledge of divine things; that all

knowledge is relative — not cognizant of things, but only of their relations — not even of relations in themselves, but only as related to us; and the knowledge of the relations of finites could not, if attainable, lead to any knowledge of the infinite God.

But all this outcry against teleological arguments, and against natural theology, arises from a confusion of thought. The objectors argue from the infinite to show that the theologian should not argue to the infinite; whereas, as the example of the mathematics illustrates, arguments from the infinite are never trustworthy, while arguments to the infinite are frequently sound and valuable.

We cannot know relations without knowing, to some extent, the things related. The fact that we cannot know things except as related to each other and to us and to our modes of apprehension, does not destroy our knowledge of ourselves and of our surroundings. We know ourselves as thinking, feeling, hoping, fearing, loving, hating, desiring, willing, — all which imply objects, and imply some knowledge both of ourselves and of the objects. We know space not in its infinite extent, but in its parts, as we divide it in an act of imagination, stimulated to that act by the perception of motion. We know space only as its parts are related to each other in distance and direction; but this implies some knowledge of space, of distance, and of direction. We know matter only in its relations to its own parts and to our sensations; but this does not deny, but implies, a knowledge of matter; so far as we know the relations of any thing, we know the thing in its relations.

Thus, also, we reply to the further objection, that we do not even know the relation of things, but only the relation of the relation to us. If science shows that greenness arises from a mechanical condition which causes light to be returned from a body in waves of a specific length, then science only shows that the testimony of the eye is more valuable than we had before supposed. When the chemist dips a platinum wire into a substance and thrusts it into the

flame, the new play of colors which arises tells him just what the eye alone can tell, and told before the noon of this century, namely, the shades of color in the flame; but it also tells him, now, the chemical constituents of the substance into which the wire was dipped, and the lengths of the waves produced by each element thus excited by heat. The old testimony of the eye to the shades of color is not invalidated by the new inferences which science draws from the shades. And if sixty or seventy thousand years hence the human eye has altered to perceive new shades, or to be color-blind to those now seen, that will not affect the truth that to the normal eye of to-day the shades are what they seem to be. As to the colors having no likeness to the chemical elements, greenness no likeness to grass, what of it? No one supposes that by saying grass is green we mean to say anything else than to say that when grass is seen, in common daylight, it affects us in a way that makes us say it looks green.

Still, the objection is urged, that even if the things perceived by sense have any objective reality, they are nevertheless only relations of finites, and give us no glimpses of the Infinite. The Infinite and Absolute cannot stand in relation to the finite; for that would render him finite and relative. Again we reply, that the objector, urging the impossibility of our knowing the Infinite, assumes, nevertheless, that he knows it; for he argues from its properties. He thus is guilty of the fault of which he falsely accuses us — the fault of assuming to know the Infinite.

All the finite things which we see have the character of effects; and we see, by direct intuition, that they are the effects of a cause. All the universe, as far as we know it, is in perfect unity, under the domain of universal laws; and we are thus irresistibly impelled to ascribe all effects ultimately to a single First Cause. The telescope reveals no limit to the visible universe; and we naturally rush to the conclusion that, even if the universe be limited, the First Cause is unlimited and infinite. The moral instincts lead to the induction that the Infinite One is in all attributes per-

fect—an induction confirmed by the unconquerable strength with which reason clings to it when once formed. But if, when we have arrived at the belief that the First Cause is infinite and absolute, we infer hence that it can stand related to nothing finite, we stultify ourselves; destroying the very foundations on which we had built our conclusion. A cause must stand related to its effects, and to each effect, whatever may be our perplexity in attempts to picture the Infinite. The First Cause stands related not only to the whole universe as its effect, but to each part of the universe. This is self-evident, and its truth cannot be overthrown by the not more true induction that the First Cause is infinite.

The First Cause is related to all its effects. The order of nature is rational and beneficent; hence we infer wisdom and love in the Creator. Our conceptions of wisdom and love are inadequate; but they give us something real, something valuable, and something which, like the conception of color, can be gained only from consciousness. All that we can know of a fellow-man's wisdom and love is by observing his acts, and interpreting them by our own consciousness. We assume a likeness in his consciousness to ours, because there is a likeness in his acts to ours. There is no valid objection to taking the same line of argument, *mutatis mutandis*, in reference to God. Thus much we indubitably know: we know that all things in the universe are related together, not only where there is a genetic relation of secondary causation, but also in parts in which we cannot see the possibility of genetic connection. All things are related together by the presence in all of the same *a priori* ideas of space and time, the same abstract ratios of number. We know that all effects are produced with the least possible expenditure of force; that all means are most perfectly adapted to the accomplishment of the effected ends. Why, then, hesitate to conclude that this intellectual form of the universe came from intellect; that the means were intended to accomplish the ends, the forms and laws to embody the ideas? We also know that these ends are beneficent, and

that the more thorough our examination of the course of nature and of history, the more firm our faith in the adaptation of all things to the highest development of man and the greatest happiness of lower creatures. So manifest is this excellence of the universe in its relation to our needs, or of the adaptation of our needs to the universe, that a majority of philosophers, including many of no mean power, have maintained that the adaptation is the most perfect possible. Shall we repress our swelling feelings of gratitude and love and loyalty toward the First Cause of all, who has made this world so beautiful, so commodious, so full of instruction, so full and varied in opportunity, so majestic and inspiring? — shall we repress our thanks and adoration, because our understandings cannot comprehend how the Infinite and Absolute One can stand related to our special surroundings, or to our individual souls?

To do so would be to affront the best and holiest instincts of our nature on the strength of a mere inference — an inference, too, which we have no logical warrant to draw from the premises. Man is the child of God, and may justly argue from his own thoughts and feelings to the intent and purpose of his Creator. It will require, of course, great care in our analysis of our own powers to decide which can and which cannot be logically carried to an infinite extent, and assigned to the Deity. It may be a task beyond the ability of mortal man to show precisely where the dividing line between the spiritual and the sensual runs. From this difficulty of deciding where, in the gradual ascent from sensuality to spirituality, the passage is made, some persons infer that there is no real division, and that the apparent spirituality of our higher thoughts is only a refined and sublimated sensuality; that in the highest flights of devotion we are simply modifying and recombining impressions of sense.

In reply to this argument drawn from the apparent blending of the two parts of human nature into one connected series of functions and faculties, we must first observe that

this argument, so popular at the present day with writers on natural history, is not to be implicitly trusted. The forms of the elastic curve, beginning with a straight line, lead by an infinite series of imperceptible variations, through fantastic figures, to a circle. The circle may then lead, through all the conic sections, to two intersecting straight lines. The circle may thus stand at the dividing point between two series of wholly dissimilar forms, and belong to both series; and if the two series are arranged as one, no eye can detect a break anywhere in the whole. Thus with the series of thoughts and feelings which lead from sensual to spiritual states, we may not detect the exact position of the ambiguous point; but we know that there is a break somewhere, since the antithesis between mind and matter is the fundamental distinction in philosophy.

The sensational school try to persuade themselves that the capacity for conscious thought lies latent, diffused through matter, called into manifest action through organization; organization being effected by some general force. But no man persuades himself that the unorganized clod is thinking or feeling. Nor can any amount of effort make even a sensationalist think of consciousness as a mere mode of motion — a power entering into the equations of the correlation of forces. Mind and matter are separated from each other by the whole diameter of being; and, although we cannot image to ourselves a spirit wholly disembodied, yet it is even more impossible to image to ourselves spirit as merely material, or matter as having spiritual powers. Yet both spirit and matter are always recognized in every act of consciousness; our imagery is all drawn from sensation; and, while we are compelled to believe in the supersensible, we cannot image it. This is the truth which misleads Herbert Spencer into his grand error of saying that because we can form no image of the First Cause, therefore the First Cause is unknown and unknowable. We form no image of ourselves, as distinct from our body; yet we know ourselves in consciousness as perceiving, feeling, desiring, willing, ruling

matter, and not ourselves material. We know ourselves, through consciousness, as to a limited extent, lords of that world of matter which we know through sensation, and to which we cannot attribute consciousness. We form designs by the intellect, and then, by a decision of the will, bend the forces of matter to the fulfilment of our designs. Our spirit thus asserts its supremacy over nature, and takes, to a limited extent, the control of its surroundings. On the other hand, our surroundings to a limited extent control us. Fatigue brings sleep, or even syncope; disease brings delirium, coma, and death. Drunkenness, poisoning, and the hygienic effects of diet, are further evidences of the control which physical conditions have over the brain and other bodily organs of our conscious life. Comte, the French founder of what he called Positive Philosophy, argues that because the functions of life depend upon the physical forces, therefore they are produced by those forces; but the argument is transparently weak; the conditions necessary for the manifestation of an effect are not to be assumed as the cause of the effect. The fundamental antithesis of philosophy, the discreteness of mind from matter, stands unassailable by any discovery of inductive science. And of these two, spirit and matter, spirit is master — master, so far as our spirits are concerned, to a very limited degree, yet to a degree wonderful and grand to our limited sight.

These two kinds of substance, mind and matter, are the only kind revealed to us in consciousness; and the classification seems exhaustive, since a thing is either capable of conscious thought or incapable. If capable, we call it spirit, however high it may stand in the scale of being above our spirits; but if incapable of conscious thought, we call it matter, however much it may differ from things sensible; as the ether.

The universe of being we thus necessarily divide into spirit and matter; and we cannot hesitate to which we ought to assign that Ultimate Cause, whose existence we must assume so long as we assume our own. Spiritual causes approximate

more nearly to the First Cause than mechanical causes can. There is no argument concealed in Spencer's nickname of the carpenter theory. He not only acknowledges, but maintains that it is impossible to avoid believing in the existence of a First Cause. But we are under a logical necessity of assuming that every existent being is either conscious or unconscious, and it is evidently and incomparably more reasonable to assume that the First Cause is conscious. Spencer asks, Why not suppose the Ultimate Cause has a mode of being infinitely transcending the human modes of consciousness? We do suppose it; all theists suppose it. We only say that it is unreasonable to assume that the Being who infinitely surpasses all our conceivable modes of consciousness can be unconscious. Therefore, under the necessity of our minds to assign some attributes to a being whose existence is pressed upon our attention, we assign consciousness, rather than unconsciousness, to the First Cause. And, under this logical compulsion to recognize the likeness of our souls to the Infinite Creator, our hearts swell with more than a mere awe of the unknowable; they swell with gratitude, reverence, adoration, and loyal love. We are not to assign our weaknesses and defects to God; and we must carefully apply the test already alluded to, and not assign to the Deity any attribute which, like sensual appetite, or hatred, or malice, is incapable of indefinite expansion. The moral instincts are also a guide; for we cannot, without violence to our highest intuitions, assume aught else than perfect holiness in God.

The recognition of moral distinctions, in their highest sense, implies the freedom of the human will; and, inasmuch as Herbert Spencer, who at present seems to be a prominent leader in the English and American anti-theistic schools, denies its freedom, it may be well to pause a moment to look at his twofold argument. "Psychical changes," he says, "either conform to law, or they do not. If they do not conform to law, this work, in common with all works on the subject, is sheer nonsense; no science of psychology is

possible. If they do conform to law, there cannot be any such thing as free-will." This is his first argument, in his own language. It rests on the assumption which every tyro in mathematics knows to be false, that fixed laws admit no choice. The number of roots in an equation may even be infinite. Organic bodies are mostly in unstable equilibrium, and may turn in any direction, and yet obey one law.

His second argument is still more astonishing in its weakness. "Either the ego," are his words, "which is supposed to determine or will the action, is some state of consciousness, or it is not. If it is not some state of consciousness, it is something of which we are unconscious — something, therefore, that is unknown to us, — something, therefore, of whose existence we neither have nor can have any evidence, — something, therefore, which it is absurd to suppose existing."

What a wonderful series of false inferences! "If not some state of consciousness, it is something of which we are unconscious." And this from a realist, who believes in the outward world! According to this argument, he should be a thorough idealist, claiming that our state of consciousness is all of which we are conscious, and that it is absurd to suppose anything else existing, either ourselves as either knowing or doubting, or any other being knowing or doubting, in our state of consciousness; the present state of consciousness, according to this argument, constituting not only the actual, but the potential, universe.

Let us, however, pass this, as a slip of attention in our author, and take up the second inference. "Something of which we are unconscious — something, therefore, which is unknown to us." Would Spencer, when not dazzled by the red rag of theology, maintain that our knowledge is limited by consciousness — that we have, for example, no knowledge of the sun, no knowledge of oxygen? Material things of which we are unconscious are known by their effects, or property of producing effects, of which we are conscious. Thus with the ego. We are not directly conscious of the

ego; but we are conscious of its effects in the state of consciousness. We know ourselves, precisely as we know material objects, by the attributes or properties. The object has the property of exciting the sensation or suggesting the thought; the ego has the property of feeling the sensation and entertaining the thought.

The third of this extraordinary series of inferences is still more glaringly false: "Something that is unknown, — something, therefore, of whose existence we neither have nor can have any evidence." That is to say, no advance in knowledge ever has been, or ever will be, possible for the human race.

And the fourth step is equally monstrous. "Of whose existence we can have no evidence — something, therefore, which it is absurd to suppose existing." In other words, all possible existence lies open to human knowledge — a large assumption, especially for one who rebukes the theologian for presuming to have some faint perception of verities that lie above the reach of the outward senses.

These are the two arguments by which Herbert Spencer attempts to show that our human consciousness of freedom and sense of moral obligation are illusions. He adds a third consideration, which is too verbose for quotation, and which we therefore condense, and, for the sake of greater brevity, translate into theistic language. It amounts simply to saying that if man were free, he could interfere with the beneficent purposes of his Creator. This is, however, a fallacy, since it assumes that freedom is unlimited freedom, and the power of the will is unlimited power. On any hypothesis, human freedom and human power are completely subjected to the general plan and order of the universe; they affect greatly the individual man's happiness or misery; but single volitions of man do not control the destinies of the race. Our liberty is small; but it is real. We insist on it, because we see it, and cannot submit to hearing its existence denied. Consciousness affirms the freedom of the will; the moral judgments of conscience imply it; and we can neither

persuade ourselves nor be persuaded, even by Leibnitz and Jonathan Edwards, much less by such fallacies as those of Herbert Spencer, that this affirmation of consciousness and of conscience is an illusion and a falsehood.

The vast majority of the anti-theistic speculators of our day admit that the movement of the universe is evolving the most beneficial results for man, that all things are adapted to our use and our education. The theist derives from this conceded fact the inference that the Creator intended all things for the good of man. The heart asks for more than this; it longs for assurance that the order of events is designed for the highest benefit of each individual, as well as of the race. The Jewish and the Christian scriptures sanction this longing of the heart, and teach that God deals with men as a father with his children, approving or disapproving their conduct, and loving them according to their individual fidelity to their highest convictions of duty.

On the other hand, we are told by some that this hope of the favor and love of God is a remnant of childish superstition; that, as God is without body or parts, so is he without passions or emotions; that his beneficence is in all respects impartial, acting only through the inflexible laws of nature. In other words, they contend that the infinitude of the Deity excludes the possibility of his passing moral judgment on men, hearing their prayers, or forgiving their sins. But their argument is fallacious; we might as well contend that the infinitude of the Deity prevents our ascribing to him the creation of the finite universe, with its separate nebulae, separate stars, diverse planets, different elements, and so on; these facts being just as irreconcilable with an infinite First Cause as the doctrines of prayer and forgiveness or the hopes and aspirations of piety can be. But we must not argue from the infinite in any case.

All men of deepest religious feeling, in cultivated nations, long for an infinite love whereon to lean, comfort themselves with the hope of forgiveness, and delight themselves in the hope of God's approval. So tender do the relations between God

and his children seem, that both Jewish prophets and Christian apostles compare it not only to the parental, but even to the marriage, bond. It must, however, be acknowledged that many of the exceedingly complex emotions of friendship and love which bind us together upon earth will be wanting in the society of heaven, and that many of the emotions which can well be supposed to swell the hearts of the saints above must be absent in the love with which God looks upon his children. The holiest and sweetest part of human love, whether here or in the world to come, is the recognition of the divine image in the beloved, the perception of our friend's superiority in some point of spiritual character to us. This is the reason why the tenderest love takes the form of adoration. In this form — the recognition of superiority — it, of course, ceases with finite spirits. But there is no reason to limit the recognition of worth, of character, to finite spirits, or to deny that God approves the victor over temptation, and loves one who strives after virtue. God acts, indeed, through universal law. But what is a law? It is an intellectual idea, embodied or expressed in a multitude of particulars. The mind which originated the idea and embodied it in the whole, embodied it in each particular instance. The intellect which planned the world planned its minutest details. We stand before him as individuals, and he knows each individual's wants. He gave us freedom, so carefully guarded that we cannot frustrate his designs, yet so real that we rejoice before him in the liberty of his children; and he loves and approves us according to our use of his unspeakable gift.

Every cause, even the Ultimate Cause, stands related to all its effects. Impossible as it is for us to reconcile the predicates assumed with those declared, in that proposition, we are compelled to admit both by a sterner logical necessity than that which would attempt to drive us to the reconciliation. The cause stands related to its effects. Utterly inscrutable as the Power which formed the Universe may be, it still remains certain that the Cause which produced the goodly whole was able to exert mechanical force, and to

guide matter according to *a priori* laws of space and time. Utterly unknown and unknowable as that First Cause may be, it still remains certain that it could produce, on this earth, at least, intellects which recognize these geometric and algebraic laws, and find delight in tracing the paths in which worlds and atoms are moving to obey them. Impossible as it may be to assign any attributes whatever to the First Cause, we know that it made these intelligent observers capable of a myriad of other forms of happiness. We may not assign to it any attributes; but we know that it also inspired these happy intelligences with longings after virtue and excellence, and with longings for communing with eternal and infinite wisdom and goodness. In other words, however inscrutable the First Cause of all, it was able to call the world into being, and guide it by wise laws; to create man, and inspire him with an expanding mind, with lofty virtue, with longings and hopes that lay hold of eternity, with loves that fill him with unutterable bliss, with a love that takes in indefinitely wider and wider circles of acquaintances and friends, and grows also indefinitely stronger and stronger in its attachments.

The reasonable induction from these facts is, that the First Cause is the All-wise, Almighty, All-holy, All-loving God, whose condemnation of sin, whose approval of goodness, whose tender yearnings of love towards each individual one of his countless children, are but faintly echoed in our moral judgment, faintly imaged in the holiest affections of our most tender relations to each other.

ARTICLE III.

THE NATURAL FOUNDATIONS OF THEOLOGY.

BY THOMAS HILL, D.D., LL.D., FORMERLY PRESIDENT OF HARVARD COLLEGE.

The realm of truth extends indefinitely, probably infinitely, in all directions. We see in part, and we are not able to state, in verbal propositions, even the whole of that which we see. At a scientific meeting in Baltimore, Peirce demonstrated that it would take an able mathematician two hundred thousand million years to make a preliminary examination of a series of plane curves which he had pointed out. These were curves of the simplest laws; add the more complicated; take also those revealed by different methods of investigation; add those which are not confined to one plane; pass then to the laws of surfaces and solids, and it is evident that in geometry, the simplest of possible sciences, there is an opportunity for eternal occupation and delight to an intelligent spirit. The other departments of mathematics, algebra and arithmetic, are equally boundless in resources. The physical sciences, the historical group, the domains of psychology and metaphysics, and our gropings after ontology and theology, remain yet to shew us what infinite resources there are for intellectual occupation in the coming cycles of eternity. And all this truth which to eternity may be giving by its discovery fresh pleasures to the expanding mind, has been from eternity known to God. His knowledge embraces not only all the real, past and future, but all the possible, and all the impossible. To see the truth is to see as he sees it, — truth is conformity to his thought.

It is sometimes said that men cannot see truth, their views must inevitably be not only limited, but obscure, and therefore doubly erroneous. But this is a rhetorical overstatement, which, strictly interpreted, would deny its own

truth; no human statement can be made which does not imply the speakers belief in its truth, and consequent belief that he sees truth. As far as man sees at all, he sees truth; and the addition of infinite knowledge would not destroy the truth already seen. God's thoughts embrace ours, but ours do not embrace his. Whatever the human intellect discovers in the relations of space and time, in the harmonics of the physical creation, or in the laws of its own thought, was known from eternity to the Creator; and it is a simple confusion of thought to object that this statement is anthropomorphitic. Man is made in the image of God, — that is not saying that God is in the image of man.

In this infinite realm of truth there are ideas which affect us profoundly, without being consciously understood. Even the simple truths of geometry may thus address us. An artist may draw a beautiful form, an ellipse or spiral for example, from his sense of beauty, without any intellectual conception of the law of that form. All truth affects the feelings to some extent, but the feeling is not directly proportioned to the clearness of the perception. The intellectual perception of a form, embodying a law, and the pleasure arising from its beauty, are not only distinct states of consciousness, but, as such, are to some degree mutually exclusive. Beauty, as an objective reality, is the embodiment of a single idea in a varied or complex form; the beauty of a material object is directly proportioned to the simplicity of the law of its being, and to the complexity or variety of the manifestation; but our perception of the beauty does not depend on our perception of the law; a person without any musical learning, for example, may enjoy a symphony.

But other emotions, than those of a simple pleasure, may thus be awakened by objects that suggest no decidedly intellectual thought. All the nicest shades of human feeling are expressed by music with more precision and force than can be given to their utterance in words. Thus also the human face may express all the varying passions of the heart.

In these instances the expression of a thought is not rec-

ognized by the intellect, but is felt by the heart, as pleasure or other emotion. There are yet other expressions of thought, objects, and relations in the world which do more than excite emotion; they awaken desire or stimulate volition.

From among these truths acting directly on the will with but a partial excitation of the intellect, let us select for consideration those which produce the conviction of duty — the sense of moral obligation. These moral emotions bear witness to the existence of other truths than those of space and time, matter and motion. Two series of facts of consciousness bear constant testimony against any sensational philosophy: first, the continual grasping of the mind after the Infinite; secondly, the constant recognition of a distinction between right and wrong, and the moral approval or disapproval consequent upon that recognition. The sensational school would resolve the judgment of right into a judgment of utility. The most ingenious explanation of this kind makes the moral judgment merely a judgment of utility not consciously formed, but unconsciously inherited from an infinitely long line of ancestry, reaching to the ascidians. Our moral indignation at this confounding of utility with right, we are told, is an illusion; by things useful, it is said, we mean those the utility of which we perceive; by things that are right, we mean those whose utility has been perceived by a majority of our ancestors. This jugglery of words explains nothing. Men perceive, and cannot wholly close their eyes against perceiving, a difference between duty and interest, between usefulness and goodness, and the attempted explanations of the sensational school are, consciously or unconsciously, a denial of the veracity of human consciousness.

But as the perception of color is the implicit perception of a rhythm in the undulations of light; and the perception of harmony is the implicit perception of law in tremors of the air; this rhythm and law not being recognized by the intellect, but being felt as beauty; so the perception of the right is an implicit perception of spiritual order, not recognized as law, but felt as duty. And as the physicist might or might not,

in the seventeenth century, have understood harmony and coloring, while still the unlearned truly saw and heard their beauty; so the metaphysician of the nineteenth century may or may not analyse the spiritual order of the universe, while still the unlearned truly see and feel the reality and sanctity of moral obligation. Our judgments of right and wrong depend much upon our temperaments and upon our education; our moral perceptions vary in clearness and precision, and need training; but this no more militates against the reality of the objects of that perception, than the need of training in mathematical and physical science shows the non-existence of space and time, matter and motion.

The most general statement of the moral order is, perhaps, that given by Jouffroy, that our duty is to fulfil our destined end: the purpose of the Creator is law to the creature. The laws of life are the conditions on which life is given; every violation of them cripples life; their flagrant violation destroys life. The implicit perception of this law in regard to the will gives the conscious sense of duty; the sense of obligation to obey the Creator. Yet this recognition of a destined end is not a full solution of the question of right. The forms of organic life are not beautiful because God chose them, but he chose those which were in themselves beautiful; in like manner the spiritual order is not right simply because he chose it, but he chose it because it was right. He saw from eternity the beauty of moral order, and its absolute necessity for his creatures; therefore he endowed us with this capacity for being impressed with the sense of obligation, when we catch, as it were, obscured glimpses of this eternal beauty.

Certain writers have separated our moral from our intellectual faculties, calling one the pure reason, the other practical understanding, or regulative principles; but, in my judgment, the difference between ethics and mathematics lies rather in the objects which they discuss, than in the powers of the mind by which they are handled. In each science we build both upon intuitions and perceptions, and the main difference is in the sharpness of definition attainable

in the two departments. In certainty of sight and of deduction the two are equal; in value ethics take precedence; in sharpness of detail, the mathematics.

We cannot, while retaining consciousness, avoid considering conscious life higher than unconscious; neither, so long as we see moral distinctions, can we avoid considering questions of duty paramount to all other questions. Conscious obedience to the Infinite Creator is the highest conceivable life; conscious refusal to yield to his will is the supremest folly. The moral judgment is an implicit perception that his will rules in the spiritual world; it is an implicit testimony to his existence. Thus conscience itself is an ambassador for Christ, beseeching us to be reconciled to God, as the only possible avenue to life, or escape from destruction. The New Testament, with its doctrine of atonement, of the reconciliation of man to God, does no violence to the highest moral sense, nor does it conflict with the highest idea of an unchangeable Creator, whose will and purpose is our only measure and rule of right; just as his workmanship is our highest type and measure of beauty. The poets of all ages and all nations bewail man's fallen and abject condition; the sublime apologue of the book of Genesis alone gives us a just explanation of that fall; an explanation which will bear the most searching criticism of reason and the moral sense. That explanation (as I understand it, and as it seems to me any man who reflects upon the extreme antiquity of the document would understand it) consists in the statement that man is placed in the garden of this world, endowed with a limited freedom by which he may, if he chooses, become a co-worker with God and a partaker in divine joys; and may, if he chooses, refuse thus to serve God, and seek only to gratify his own wishes. He chooses the latter, he thus goes wholly out of the way of life, and his only possible salvation is a complete change of direction, turning his face again toward Jerusalem, and renouncing his perilous descent to Jericho. So soon as this revelation of the fall of man from allegiance to God to the service of himself is announced to

us, our conscience bears testimony to it, and the exceeding guilt of sin is seen to consist in this virtual enmity against God. The conscience thus awakened becomes so much impressed with the guiltiness of sin, that it sometimes endorses the doctrine of the personal immortality of the soul, as the only means of vindicating the eternal justice of providence, which does not appear to award to men in this life the full measure of their deserts.

The sense of the certainty of retribution for sin sometimes leads to the doctrine that the effect of sin is inevitable, and that forgiveness is impossible. The difficulty of free and full forgiveness, from God or from man, is keenly felt, even when forgiveness is not pronounced impossible. Yet, on the other hand, there is a native admiration of mercy; so that mercy has been always accounted even more divine than justice. The Christian religion is not therefore, unreasonable or incredible in its offers of forgiveness; in its assurance that the sacrifice on Calvary may take away our sins. The inviolability of law does not imply the inevitability of punishment. It is certainly established, in medicine, that some poisons have efficacious antidotes, and that for certain diseases there are unfailing remedies. The inviolability of law, therefore, does not prevent medical skill from sometimes defending health against every permanent effect of poison or disease. The physical consequence of sin, in other words, may sometimes be avoided, despite the inviolability of physical law; sometimes not even a scar remains from a wound; nor a trace of weakness from the bed of sickness; why is it then impossible that the great physician can heal a soul from the leprosy of sin without leaving a scar or any sign of weakness?

In these articles upon the certainty of religious knowledge we have thus far been considering, principally, the intuitions of spiritual and moral truth. Let us turn to a more particular examination of the outward world, the testimony of the material, the visible, to the invisible and eternal. The arguments of theology founded on external nature have been usually divided into the two great classes, the teleological

and the morphological. The teleological argues from the adaptation of means to ends; the morphological from the conformity of parts to a general plan. This latter is thus the more general, embracing wider ranges of phenomena; it would discover instances in the outward world of conformity to *a priori* conceptions of order in space or time, and claim them as proof that this conformity is the expression of an intellectual conception of that order.

The modes of embodying or illustrating an idea may be very various. Take, for a simple example, the idea of division in extreme and mean ratio, that is to say, of division into two parts, such that the less shall have the same relation to the greater, that the greater does to the whole. We may approximate this division by dividing unity into the two fractions, .61803784 and .38196216, or express it exactly by saying the lesser fraction is half the difference between three and the square root of five. Or we may divide, by various geometrical devices, a straight line, or a curved line, or a surface, or a solid, or an angle, in the proposed proportion. Or we may take a unit of time, or of velocity, and let the velocity be in a right line, or in a circle, and devise mechanical means of the division. Or we may take a unit, not strictly susceptible of quantitative measurement, and enlarge thus our idea from mere ratio to general relation, and thus embody a division in extreme and mean ratio in a poem, a sonata, a novel, a drama; or in a political organization, in church or state.

Now any one of these modes of embodying that idea is also a mode of uttering, explaining, and illustrating the idea. The simplest mode is the geometrical, and the simplest possible would be the simplest among the subdivisions of the geometrical. The power of perceiving space is the lowest among the intellectual powers, and its culture serves as the foundation for all the superstructure of learning. Space is in itself infinite and without parts, and, therefore, would be wholly incapable of apprehension by the finite mind, but for our connection with matter and motion through the body. This embodiment of mechanical force in the physical frame,

force that can be manifested only in motion occupying both space and time; and the dependence even of conscious thought upon motion in the brain, thus weaving time into the very life of the soul; gives us the ability to recognize the presence of space and time, and to impose arbitrary divisions upon them. The first act of spontaneous muscular motion calls our attention to the existence of space, and the first intellectual exercise is the analysis of the perceptions thus gained. During the earliest years of childhood the recognition of things by their shapes occupies by far the largest share of a child's mental activity. From the analysis of space come the first lessons in precision and accuracy. Nor can the adult find any precision of thought to compare with the conception of a geometric locus. The point, the line, the surface, are absolute zeros in space; and the law of a locus, confining a point to a given line or given surface, allows of absolutely no variation, no play; it demands an obedience to which even the fidelity of the physical elements to law might be considered riotous license. Hence the shortest fragment of a curve contains the whole law; could the geometer know the exact path of a comet for the thousandth of a second, he could, from that, predict accurately its whole course and orbit in its journey of centuries through the remotest bounds of our system.

Yet this same science of geometry, which gives us our first lessons of precise accuracy, gives us also our first definite measure of the value of approximation. No material objects can perfectly fulfil a geometric law; yet an approximate fulfilment, by a model of stretched threads, or carved wood, or by lines drawn with pencil or with crayon, is an announcement of the law, which is to most persons clearer, more intelligible, than any announcement in written symbols. The points of space which exactly fulfil the law have no physical powers; they cannot attract particles to themselves; they are distinguishable from contiguous points only by a mental act of an intelligence that knows the law of the locus. When, therefore, we see the streak of chalk upon the black-

board, making even a rude approximation to a symmetrical form, we irresistibly infer that the chalk was guided by an intelligent hand, designedly embodying the law, held in the draughtsman's mind, either in an artistic, or in a scientific form.

This reasoning is as strictly just applied to natural as to artificial forms. There is no more power in points of space to attract atoms or molecules than to attract masses. The crystalline forms of minerals indicate the action of conscious intelligence precisely as the models of crystals in the cabinet do. That higher intelligence which guides the action of natural forces must, of course, view the laws of geometric loci in a very different manner from that of our feeble and slowly developed comprehension. But that higher intelligence has a perfect knowledge of such laws, not no knowledge; and the demonstration of this truth is found in the close conformity of crystals, and the more wonderful conformity of organic forms to geometric laws of symmetry.

It is from these diagrams of nature that men get their first suggestions of geometric beauty and law, and are stimulated to the invention of new laws. Nor can we fail to notice how frequently the law which men have invented, proves to have been already known and used in nature. The mathematician devises a geometric locus, or an algebraic formula from *a priori* considerations, and afterward discovers that he has been unwittingly solving a mechanical problem, or explaining the form of a real phenomenon. Thus, for example, in Peirce's Integral Calculus, published in 1843, is a problem invented and solved purely in the enthusiasm of following the analytic symbols; but in 1863 it proved to be a complete prophetic discussion and solution of the problem of two pendulums suspended from one horizontal cord. Thus also Galileo's discussion of the cycloid proved, long afterward, to be a key to problems concerning the pendulum, falling bodies, and resistance to transverse pressure. Four centuries before Christ, Plato and his scholars were occupied upon the ellipse as a purely geometric speculation, and Socrates seemed

inclined to reprove them for their waste of time. But in the seventeenth century after Christ, Kepler discovers that the Architect of the heavens had given us magnificent diagrams of the ellipse in the starry heavens; and, since that time, all the navigation and architecture and engineering of the nineteenth century have been built upon these speculations of Plato. Equally remarkable is the history of the idea of extreme and mean ratio. Before the Christian era, geometers had invented a process for dividing a line in this ratio, that they might use it in an equally abstract and useless problem — the inscribing a regular pentagon in a circle. But it was not until the middle of the present century that it was discovered that this idea is embodied in nature. It is hinted at in some animal forms, it is very thoroughly and accurately expressed in the angles at which the leaves of plants diverge as they grow from the stem; and it is embodied approximately in the revolutions of the planets about the sun. These three embodiments, moreover, have no apparent genetic or causal connection. Plants can scarcely, on the theory of progressive evolution, have come from a common ancestry with animals; nor can the revolutions of the planets be imagined as controlling the angles of the leaves of plants. Let us further observe that the nature of the unit is different in the two cases; in the plants, stationary angular distance around the stem; in the planets, angular velocity of motion. Nor have we, even in the case of plants, any clew to the proximate cause of the arrangement, beyond a vague analogy to a supposed law of the genesis of cells.

Now in all these cases of the embodiment in nature of an idea which men have developed, not by a study of the embodiment, but by an *a priori* speculation, there seems to us demonstrative evidence that man is made in the image of his Creator; that the thoughts and knowledge of God contain and embrace all possible *a priori* speculations of men. It is true that God's knowledge is infinite and beyond our utmost power of conception. But how can we compare the reasonings of Euclid upon extreme and mean ratio, with the

arrangement of leaves about the stem, and the revolutions of planets around the sun, and not feel that these phenomena of creation express Euclid's idea as exactly as diagrams or Arabic digits could do; and that this idea was, in some form, present in the creation?

Yet this is only a single one of very numerous examples. In Agassiz's Introduction to the Natural History of the United States, he brings, from the animal kingdom alone, a vast, almost innumerable, multitude of facts arranged to show the presence of ideas in the phenomena of animal life; and the result is a cumulative argument, irresistible to a mind capable of appreciating logical proof; demonstrating that the intellectual distinctions upon which the classification of animals proceeds, in species, genera, families, orders, classes, and departments, are not subjective distinctions in the naturalist's thought, but objective distinctions in the animals, proceeding from intellectual distinctions in the creative mind.

We are aware that this Introduction to the Essay on Classification has been severely criticised, on the ground that the only business of science is to formulate facts into the briefest and most comprehensive expressions. We deny altogether this definition of science, her work is incomparably higher; the prevalence of this error would presently crush out all physical science; just as the prevalence of a kindred error crushed out geometry among the Romans. Science is systematized knowledge; and the knowledge of principles, laws, and ideas, is incomparably better than the mere knowledge of the facts which embody them. An empirical formula may generalize the facts in the briefest manner, and yet it is unsatisfactory to a scientific mind. The object of science is to unfold the intellectual order and harmony of creation: and while it can be attained without distinct recognition of the Creative Wisdom, it cannot be attained by those who deny the presence of Creative Wisdom. Linnæus and Cuvier made their grand discoveries only by aid of the assumption that everything in organic nature is perfectly adapted as a means to an end; and Agassiz's more powerful and subtile

instrument, by which he has made advances that carry him beyond the power of many of his fellow zoölogists even to appreciate, has been the more general axiom that all the forms of organic nature are intellectually related as parts of one intelligible plan.

Inorganic nature is also built on an intellectual scheme. The law of gravity by which its force varies as the square of the distance, is shown by the mathematician to produce better results than any other law — it is the simplest conceivable law of emanation; but we see no other causes for its selection, except these intellectual reasons. The symmetry of crystals and of the undulations of the ether are produced not only by attraction and elastic repulsion, but probably also by original symmetry in the atoms of matter. The phenomena of light demonstrate, at least, that the crystalline form is sometimes present in a clear solution of the solid in a liquid. The secret of the form is, therefore, in the molecule, and probably in the atom, and no explanation is probable except that of Newton, who assigns the atoms to the creation of God.

The "occasion for the hypothesis of a Deity" is still more urgent when we consider organic forms. A universal force, acting under general laws, would produce forms of stable equilibrium, limited in their variety. But the forms of organic life, of almost unlimited variety, are not in stable equilibrium; their structure is essentially one of rhythmic change; nay, they may even be considered as in a state of perpetual decay and repair; the universal forces of light, heat, and actinic power, tearing them down as fast as they build them up. The action of these forces varies in each kind of creature, and even in each individual; it is not guided by a general controlling force, but by an individualizing guidance of special law, without force, which is an indication, or rather demonstration, of the presence of thought.

A special evidence of the intellectual element in the laws of organic life is alluded to in the expression just used, of rhythmic change. From the egg or seed the organic being goes through a series of successive changes, various as the

variety of forms, until it reproduces the egg or seed. This regular progress of metamorphosis in the animal or plant, is as clearly intellectual, as impossible to explain on mechanical considerations only, as the rhythm of a musical melody, or of the pulsation of a message travelling over Morse's lines.

The gemmiferous multiplication of a polyp, the bulb-like buds of the red lily, show that there is no necessity in the nature of things that propagating organisms should have a difference of sex, and ordinarily multiply by the fecundation of ovules and ova. The existence of this kind of multiplication, therefore, in all the species of either one kingdom must be accounted an intellectual unity of plan, requiring the hypothesis of an intelligent cause; and such a hypothesis becomes more than doubly necessary by the presence of so closely analogous kinds of propagation in both kingdoms.

The teleological and morphological arguments are sometimes closely blended; we see both the idea embodied, and the purpose of its embodiment. But in other cases the perception of law or symmetry in a form may force upon us the conviction of design, when no purpose of the design may be visible. The exquisite forms of flowers, and of the markings upon insects are as clearly indicative of thought as any diagrams can be. Those who refuse assent to this morphologic argument, must either do so from the feeling that it is impious to attribute to the Infinite First Cause any finite ideas, or from the feeling that the natural form grows by a natural law.

But it appears to me a misconception of the morphological argument to suppose that it attributes human ideas to the Deity; it merely assumes that the human or finite idea was included in the divine ideal of creation. It is the manifestation of these ideas in nature which has always been the clearest guide and most powerful stimulus to the invention of *a priori* laws, as though one purpose of their manifestation had been this instruction or education of the human intellect. In regard to the other prejudice, that natural forms grow by natural law, we must remember that a law is not a force; it

is merely an order in which a force acts, and that order implies intelligence guiding the force. Points in space and instants in time have no distinction from each other, except in the election of the mind which sees them, and selects them for the purpose of expressing thought. Space and time have no power over matter; matter is obedient to spirit alone; and the arrangement of matter in order, whether symmetry of form or rhythm, is the result of its obedience to will guided by thought. Any other supposition to account for the cosmos, the universal order, seems to us wholly untenable. The attempt to refrain from accounting for the phenomena is vain, the mind is irresistibly impelled to attempt the solution of the problem; and the heart is thrilled with joy when the intellect announces, as the solution, that the First Cause is all wise and all good, as well as almighty.

Let us not forget that we are passing here, in a few pages, over a branch of argument capable of almost indefinite expansion. We have alluded only to form and rhythm; but morphological arguments might be drawn from the chemical relations of the elements to each other, to the organic world, and to our *a priori* conceptions of number. The relations of plants and animals to each other, and to inorganic matter, furnish numerous proofs that the world was arranged by divine wisdom; — the harmony between instinct and organization; the relations of instinct to reasoning; the connections between man and the lower animals; the interdependence of animals on each other, and also of many plants; the adaptation of the astronomical facts to those of terrestrial life; and each one of these subjects would furnish matter for many pages of exposition, were we disposed to expand the morphologic argument. Again, the higher field of human life would furnish many invincible proofs of the guidance of overruling wisdom. The relations of the sexes to each other; the variety of endowments among men, and differences in the degrees of endowment; the contrasts in national characteristics; the form of the continents, and arrangement of mountains, rivers, and seas; the variety of mineral and veg-

etable productions in different lands; these are a few of the points in which the arrangements of the world, of men, and of nature, seem the result of intellectual plan or guidance; neither the effects of chance, nor of obedience simply to general invariable laws. When, however, we assert that universal and invariable laws are not sufficient to account for the forms of nature, we do not mean to imply miracle — a suspension of the law of physical causation. All effects upon the earth are in some sense historical, and we can never, in the course of scientific investigation, put our finger upon a link in the series, and say: This was purely miraculous; there was no secondary causation here. Even the change from the fauna and flora of one geological epoch to another was, probably, accomplished through some action of secondary causation; although that action has left no trace of itself, and the speculations of the present century are as wild and unsatisfactory on the subject as those of Lucretius. The only visible connection between the epochs is the intellectual unity which binds the forms of organic life in the earlier to those in the later. That intellectual connection would not become null, nor lose its significance, should future scientific research reveal to us in reality, what the doctrine of natural selection idly claims to have revealed, the mode by which this connection was physically accomplished. If an effect is intellectual, composite, and harmoniously proportioned in its parts, then the First Cause was intelligent, whatever the intermediate steps of causation.

The morphological argument may, then, be thus generalized: When anything whatever is found to be so arranged as to express or embody an idea, the presumption is that the arrangement was made by an intelligent will; and this presumption increases in strength with the complication of the arrangement, the complexity of the idea, and the fidelity of the arrangement to the idea; increases with such rapidity that a very moderate degree of complexity and of fidelity makes the presumption become a certainty.

The teleological argument is drawn from marks of a design

beyond that of the expression of the idea, a design to effect an end. The world not only expresses the thoughts of the creative intelligence, but accomplishes the results that daily come to pass, so that there is an adaptation of means to ends everywhere visible. Theological thinkers, from at least the times of Socrates, have quoted these adaptations as illustrations of the divine wisdom. But the argument has been objected to, from the religious as well as the irreligious side, as irreverently likening the action of the Infinite God to the contrivances of men.

Yet when anything subserves a purpose, the presumption is that it was made for that purpose; and this presumption is stronger in proportion to the complication of the instrument or means, the complexity of the purpose, and the completeness of the adaptation to subserve the purpose; the presumption increasing so rapidly that with moderate complexity and completeness of adaptation the presumption becomes a certainty. Nor is there any valid objection to applying this argument to organic structures. Take, for illustration, Socrates' example, the human eye. Consider the sensitiveness of the retina, the transparency of the humors, the automatic variation of the pupil; the muscles and pulleys of various kinds; the protection by lids, lashes, and brows; the fountains for washing, the sewers for drainage; the use of the lid to wipe it; the excellence of the lenses, the approximate achromatism, the adjustable focal length, the stereoscopic effect of the binocular arrangement. As we run over this complicated series of the adaptations of the eye to sight, the presumption that eyes were made for seeing becomes an absolute certainty.

But the French encyclopedists answer: No, they were not made at all, they grew. And the men of the present day undertake to tell us how they grew; how the sensitiveness to light diffused over the whole surface of the zoöphyte, being a little more concentrated in spots upon some individuals gave them an advantage in seeking prey or avoiding danger, and thus, by natural selection, favored those that

tended to have eyes, and to multiply them, and this process after millions of repetitions gradually formed the perfected human eye. If these dreamy speculations were as true, as they seem to me false; if they were as well founded, as they seem to me absolutely baseless; they would not confute the teleological argument. Such a process of developments could not take place by chance; the result of the process is such as to show that intelligence presided over every step, whatever the steps may have been, and howsoever numerous.

The encyclopedists accused the theists of *petitio principii*, of assuming that the eye was made, and arguing from the manner of its making. To us it rather seems the encyclopedists begged the question, assuming that growth is not a building. In our judgment growth is a building. Men work with masses of finite size, nature works with infinitesimal bricks. When the sun,

> infusing subtile heats,
> Turns the sod to violets,

he makes himself a servant to the violet, who shows him where to deposite each atom of matter, so as to build the spade-shaped leaf, and the blue corolla, and the odorous nectar, while the sun complacently obeys. He that thinks to rob this process of its mystery by calling it simply growth, deceives himself with a word. Vegetable growth is the building up, and keeping in repair, by the blind forces of the sunbeam, of a complicated, but symmetrical, house for a plant to dwell in. Animal growth is building up, and keeping in repair, by the same forces, procured at second hand, through the destruction of plants, of a still more exquisite house for an animal to live in. The chemical forces have no choice in building a man or a zoöphyte; nor can they be guided by any merely mechanical pattern. In the ovule and in the ovum is contained what the highest microscopic power regards as a homogeneous fluid. Upon the outer wall of the sack containing it, comes another smaller sack, and rests there. The fluids in these two sacks probably intermix by endosmosis. But the matter thus received into the ovule or the ovum is

an infinitesimal amount of fluid, conveyed by filtration through two filters, each infinitely close in texture. Yet it distinctly modifies the form, coloring, size, and hardihood, of the organization that springs from the germ; and in the case of the animal determines, sometimes completely, the mental and moral character of the offspring. These effects can scarcely be imagined as the result of any merely physical properties in that minute drop of filtered liquid. The life of the body does not depend on the organization, but the organization on the life. The building of the body is the work of thought, which was originally conscious thought, even if now exercised by an unconscious soul.

But we are sometimes warned from teleological arguments, on very different grounds. We are told that if we argue divine benevolence and wisdom from natural adaptations, we should also argue malevolence and folly when things go amiss. We are warned that the moment a scientific man speaks of the purposes of creation, he has stepped out of his sphere, and is no longer to be trusted. These warnings come from a mistaken view of the subject. When an anatomist, convinced by the irresistible logic of facts, believes that the eye was made for seeing, he does not assume any knowledge of the divine purposes above what is revealed equally to all observers. He does not, therefore, by his religious inference, betray any self-conceit, or any bias that would bend facts to his fancy; he merely takes the position of Galen, of Cuvier, and of Agassiz. These men were aided to their great scientific discoveries by their theistic postulates; and the belief in theism cannot, therefore, be fatal to scientific accuracy and research. And as for arguing the divine malevolence from suffering, as readily as the divine benevolence from happiness, the assertion will not bear a moment's examination; the only logical inference on the teleologic ground would be that suffering is appointed by Infinite Love and Wisdom as a means to some higher good.

Persons of strong religious faith very often object to hearing any argument from final causes, because they deem it

derogatory to the dignity of faith, to suppose that she needs the aid of sight or logic; they also speak of the argument from design as implying that the Deity found difficulties, and contrived ways to evade them. The argument is thus trebly offensive to them; affronting faith, likening God to man, and forgetting his infinity. To which we would reply: that no teleologic argument is intended to verify, much less to supplant, the intuitions of faith, but as an independent source of religious knowledge, greatly strengthening and comforting souls deficient in those intuitions; nor does the argument liken the Deity to man, any more than any ascription of wisdom and love to him. All devout recognition of the being of God calls him wise and good. But what can I mean by calling him wise, if I am not permitted to recognize his wisdom in the perfect adaptation, throughout the universe, of means to ends; if I am not permitted to trace, in the countless evolutions of nature, the development of ideas? What can I mean by calling him good, if I am not permitted to recognize his beneficent purposes, and show to myself how marvellously all things unite in contributing to the welfare. the happiness, the instruction, the improvement of mankind? If some men find their adoration of the Infinite God grow more humble and more devout as they thus enjoy what they regard the highest privilege of their intellectual nature, in tracing the thoughts and purposes of God, then it ought not to be called an irreligious or irreverent work.

To say that the teleologic argument degrades the Infinite by assigning to it finite thoughts and purposes, is simply to fall into the vice of arguing from the Infinite. We are told that to say that he made the ear for hearing, the eye for seeing, is limiting the action of the Infinite in space and time; whereas the Infinite can act only throughout all space and all eternity at once. Now this objection does the very thing it falsely accuses the teleologic argument of doing: it limits and debars the Infinite from a possible mode of action; and from a mode which does not imply finitude in the actor. It is the objectors mere assumption that the teleologic argument

limits the action of the Infinite to the particular case before us. The inference that eyes were made for seeing does not involve the inference that eyes were made by a special or finite action. It only implies that if eyes were made by general laws, the Author of those laws foresaw and intended eyes to result; which is far from inconsistent with faith in the omniscience of the Deity.

If we were going to argue from infinity at all, a sounder line of argument would tend rather to justify teleologic arguments under one grand conception of predestination. For a law of nature is a thought, in conformity to which a multitude of particulars have been created and arranged; and it thus implies, not only a knowledge of the whole, but of each particular result of the general law. There is, therefore, no *a priori* reason why we should attempt to resist the strong presumption, the certainty, arising from morphological and teleological arguments. The human face is, perhaps, the most familiar object of sight that greets our eyes. For this reason we see suggestions of it in every object of varied outline, rocky cliffs, summer clouds, double flowers, coals upon the hearth, shadows from the firelight, etc. Yet if the suggestion merges into a faithful and spirited copy; if the anatomical detail of every part becomes approximately perfect, and the expression strongly human, we have a certainty that art has interfered, and that we are not looking at the creation of chance. When a piece of Grecian statuary is recovered from the bed of the Tiber there is no suspicion that it is a stalagmite from Antiparos. And if there be any doubt about this argument, arising from the fact that the statue is a copy of a work of nature, consider instead, a sonata or a symphony. This is not a copy of nature; but the perfection of its rhythmic symmetry and its aesthetic expression stamp it as infallibly the work of mind.

A French atheist is reported to have said: "Chance can do anything, if you only give it chances enough;" and added that, "with an infinite number of throws he could throw the Greek alphabet into the Iliad." For, he seemed to imply,

from an infinite number of throws, there results an infinite number of positions; therefore all positions; therefore the position in which the letters stand in the Iliad. But the first axiom is wrong; an infinite number of throws will not give an infinite number of positions; and the inferences are wrong; the infinite number of positions would not give all positions. Give Diderot a selection of only those particular letters which are in the Iliad, and let him throw with inconceivable rapidity to all eternity, each throw would produce only a confused jumble of letters, without ever producing orderly sentences. Now in the book of the Cosmos, there are not only orderly and intelligible sentences, but it is all in order, there is no jumble; and it is more impossible to imagine it springing from chance, than to imagine the Iliad thrown from a dice box; or Beethoven's Christus am Oehlberg produced by a dance of cats upon the keyboard.

The teleologic argument in its narrower sense is equally strong. When in the excavations at Pompeii, or at Jerusalem or on the Euphrates, a house is uncovered filled with conveniences and tools of various kinds, it is absolutely impossible for a sane mind to entertain the question whether this is the work of intelligent skill; we know it as we know our own existence. There is no simply intellectual or logical reason why our certainty should not be as great at finding ourselves in this house of the world, filled as it is with every conceivable convenience for us, and furnished with admirable tools wherewith to accomplish our work. Run rapidly, with the minds eye, over some of these materials; the metals, minerals, stones, rock-oil, coals, water, air, gases, all adapted to our needs; sand, lime, clay, marbles, granites, sandstones, with various utilities; the sun's light, heat, and actinic power, in his rays, and stored in the beds of coal and petroleum; oceans, rivers, rains, and dews; the plants and animals in their relation to us; the human frame and its capacities for delicate operations; consider all this adaptation; not a thing out of place, not a thing ill adapted; all, as far as we can discover, fitted perfectly for some end with infinite wisdom.

How can we resist the conclusion that it was by infinite wisdom? How can we resist the conclusion that the wonderfully complicated adaptation of so many means to these varied ends, keeping up the beautiful rhythmic succession of forms in plants and animals from generation to generation, is from the presence and guidance of Intelligent Thought?

The only reasons for dissatisfaction with the argument are moral, not intellectual. Logically the teleologic argument, like the morphologic, is impregnable; it is one of those cases, as satisfactory as any demonstration, in which the induction converges so rapidly towards certainty, as to produce justly the sense of certainty. The convergence in this case is manifold; the argument is drawn from an uncounted number of cases, each offering adaptations of great complexity and great perfection. The cases are also indefinitely varied in character; some referring to mechanical, some to chemical, to physiological, some even to intellectual and to moral ends, such as the education and refinement of man, and all these varied ends accomplished by a complex arrangement of well-adapted means. Such a convergence of numerous lines of the highest possible inductive proof can be brought for no other truth. Nor must we forget that, in regard to mechanical ends, the mathematician can frequently give *a priori* demonstrations that the means are the best possible. Thus it may be demonstrated that a division of the circumference in extreme and mean ratio, gives to the leaves of plants the fairest possible law of access to air and light; and gives to the planets the fairest possible chance of revolving around the sun undisturbed by their neighbors.

Logically the arguments from the external world are unassailable, and the being of an intelligent God is proved by an induction far stronger than that which sustains the law of gravitation or the correlation of forces. The lack of earnest conviction arises from moral causes, which may, perhaps, be classed under three heads: First, there is an illusion arising from the absence of any chaos to contrast with the Cosmos. The universal prevalence everywhere of this perfect harmony

and adaptation of part to part, produces the feeling that there must be a necessity for it. Men are like children, accustomed from birth to the luxuries of their father's house, until they think them things of course, and forget their obligation to his care and forethought in providing them. Secondly, there is in many hearts, undoubtedly, a sense of guilt, generating a half-unconscious fear; and that producing a willingness to find the proof of the existence of a righteous God defective. Even where the alienation from God is not sufficient to produce this reluctance to be convinced, it may be sufficient to produce exclusive devotion to other lines of thought, and consequent failure to appreciate the argument. But, thirdly, there are causes of dissatisfaction with the arguments of Paley, of the Bridgewater Treatises, and the Graham Lectures, more creditable to a Christian community. With some there is a strength of religious faith, springing from direct intuitions, that lays hold of God so firmly as to need no support of consciously drawn inferences; with others there is an intense longing for assurance, a quivering, trembling, burning hope, which fears that, perhaps, so ineffably precious a doctrine as the presence of a God of infinite wisdom and love, caring not only for all, but for each, of his children cannot be true. Would that these timid, longing, loving, souls could attain to our conviction, that the presence of such a Father is demonstrated by every possibility of argument; and that the language of Herbert Spencer concerning the existence of an ultimate cause may be justly used concerning the existence of God in the highest, the holiest, the most loving and tender sense, in which the happiest experience of a soul reconciled by Christ and sanctified by the Spirit can speak of him; namely, that we have a higher warrant for believing in God than for believing in any other truth whatever.

THE

BIBLIOTHECA SACRA.

ARTICLE I.

THE TESTIMONY OF ORGANIC LIFE.

BY THOMAS HILL, D.D., LL.D., FORMERLY PRESIDENT OF HARVARD COLLEGE.

We have endeavored, in this Journal for the current year, to show that the morphological and teleological arguments, drawn from the vegetable and animal kingdoms, are, in their value, independent of all theories concerning the development and succession of animals and plants. We have said that no form of the development theory is satisfactory, or properly deduced from facts; yet the grand theological axiom of the divine economy, so fruitful of scientific results in the mechanical principle of the least action, authorizes us to expect some better theory in the future, which will accord with the facts of the case. That better theory will not ignore the theological foundation, on which all true science is, consciously or unconsciously, built, — the assumption that there is a divine plan, an intellectual order, in the economy of nature.

The fundamental antithesis of philosophy is the distinction between mind and matter; an antithesis which cannot be ignored by science when it approaches the boundaries of metaphysics. Yet in the speculations of a philosopher, not scientific, and of a scientist not metaphysical, there sometimes appears a confusion of thought, leading them to suspect the identity of matter and spirit. Thus Huxley apparently wonders at himself, that he should be "individually no mate-

rialist, but on the contrary believe materialism to involve grave philosophical error"; while he yet "can see no break in the series of steps" by which "carbon, hydrogen, oxygen, and nitrogen," "all lifeless bodies," unite in varied proportions, and in varied conditions, in more or less complex bodies, of which one of the most complex is protoplasm, which "protoplasm exhibits the phenomena of life." From this point again he sees no logical halting-place, between the admission that such is the case, and the further concession that all vital, intellectual, and moral actions are the results of the molecular forces of protoplasm.

Huxley's wonder that he retains his faith in spirit, while admitting the existence of protoplasm, in the unproved and improbable form above stated, may arise from his never having examined and appreciated the logical grounds of his spiritual faith. There is nothing in the modern discoveries of the correlation of forces (sublime triumph of science as it is), any more inconsistent with spiritual philosophy than the familiar facts of sleep, fatigue, exhilaration, birth, and death.

In this workshop of nature, in which men are put as apprentices, are various simple raw materials; among them the four organogens enumerated by Huxley. Under proper conditions, of heat and light and other molecular forces, they combine in various compounds. By the art of the chemist, varying the conditions, a still greater number of compounds is produced. In plants and animals there is a yet greater variety of products; but the brilliant success of the chemists during the last few decades leads them to hope that they will ultimately be able to produce from the elementary organogens all organic products. Enthusiasts also expect to produce from organic elements organic beings. And this is the precise point at which the confusion arises in the passages which I have quoted from Huxley; the confounding of organic products with organic forms. Organic products, if not amorphous, have only a crystalline form; their whole constitution is explicable on chemical laws, and atomic figures.

Not so with organic form and vitality. The chemical and

atomic laws give coherence to the organic body; but neither give life nor the specific form. The best judges, even among those who desire to uphold the doctrine of spontaneous generation, admit that, up to this date, all experiments have failed to show its possibility; and that the axiom of Aristotle stands unimpeached: Every animal from an egg; every plant from a seed. There is no conclusive evidence of a protoplasm exhibiting the phenomena of life, without an organic form. Here is the logical break in the series of steps for which Huxley asks; it is in passing from organic or organizable product, to organic life and organic form. Careful physiological research has shown that there is no vital force; all the forces in the plant, or animal, are chemical, or other familiar molecular forms of force; there is no vital force; but there is a vital guidance of forces, leading them in the organized body, not only to unite in peculiar chemical products, but to build peculiar forms, wholly unlike crystalline forms, and wholly inexplicable by any general laws, so far as the imagination of our best mathematicians can conceive.

Now this vitality, not correlated with the forces by which it builds the plant and the animal, — what is it, and in what does it adhere? In the organized matter? If the old views of vital force had stood under scientific examination; if it had been shown that in the organism a new form of force was developed, correlated with the other forms, then we might have answered, yes, it is a result of the organization. But it is not a force, it is an ability to guide forces; ruling them not by force, but by something that can be compared only to an intellectual guidance. It thus shows its kindred to thought, to the soul, and gives us, even in the lowest forms of vegetable life, the fundamental antithesis between matter and spirit. But, as we have various planes on which matter lies — the elementary, the composite, the vegetable, the animal, — and it requires force to lift matter from one plane to another, and sets force free for work when matter falls back again towards the elementary form; so, also, we have spirit in various planes — in vegetable, in animal life, in un-

derstanding, reason, appetite, instinct, sentiment, in unconscious, conscious, in involuntary and in voluntary action — although we have not discovered any law by which it can pass from one plane to another.

Yet the existence of a something different from matter and force in each of these, and higher forms, is avouched to us by the exhibition of phenomena for which no conceivable action of matter and force will account. The materialistic school of psychologists endeavors to reduce all this diversity of psychical development to simple law, and to show how the unreasoning, apathetic, sightless, and deaf zoöphyte, gradually grew into man, with his perfected senses, his exalted feelings, his soaring imagination, his glowing faith, his rapt devotion. To us their endeavors seem to be total failures; they need an infinite unrecorded time in which to effect the recorded changes; while not only does physics show that the planet's whole duration has been occupied in depositing the stratified rocks recording the mere results of the changes; but the very appeal to infinite time to effect what finite time shows no tendency to do, is a concealed fallacy, arguing from the infinite, which it is not lawful to do, and which justifies Agassiz in his sarcastically referring them to Chamisso's "Tragische Geschichte." But, granting that they had succeeded in showing how the present diversity came, this would not alter the conclusion whence it came. The adaptation of the world to this process of development, and to the creatures in each stage of the development; and the adaptation of the primal laws of nature, to produce such an orderly, intelligible development, would still force us to ascribe it to an intelligence of infinite wisdom and power as its source.

We hold, therefore, that whatever may be the fate of the modern development theories; whether, as their authors hope, established as scientific facts, or whether sent, as we predict, finally to the oblivion of forgotten dreams; the adaptation of instincts to the organization, and to the world, is one of the invincible arguments for the being of God.

The honey-bee presents a hacknied example, but we select it as an illustration on that very account, that we may not deceive ourselves with any false facts. This insect lives upon honey as its principal food, and in this climate, stores it away during the summer months, as if for future use; stores it in cells, built of wax secreted from between the rings of its own abdomen; and uses this wax chiefly for the manufacture of cells to hold honey, or to hold young bees. They live in large families, consisting each of one female, some dozens of males, and some hundreds of apparent neuters. The work of building cells, gathering honey, feeding the young, etc., is done by these neuters; and if the female is killed or removed, the neuters make a larger cell, and placing in it an egg which would apparently have otherwise developed into a neuter, make it become a female. She was by the ancients called the king, by the moderns is called the queen. We have seen her walking among an immense multitude of her subjects, a way being cleared for her sacred person, whichever way she turned, so that she never came in contact with any of the crowd. This apparent sanctity of person is probably what has given the female bee titles of royalty from men.

Now the argument may be thus stated. The bees lay up honey, as if by foresight of a failure of food in the winter. They have a peculiar power of secreting wax; and peculiar skill in using it to build cells. They are without developed gender, but seem to know the office of the sexes, kill the males after the pairing, bestow upon the future mother the most obsequious attention, and watch her eggs and feed her young with tenderest care. If this mother perishes, they provide a new mother, by developing, through proper care, the female sex in an egg otherwise about to give rise to a neuter like themselves. The inference is incontrovertible that their mental and moral faculties, or the instinctive desires and volitions which stand for them, are exquisitely adapted to their organization and to the actual condition of the world. A second inference is, to us, equally irresistible,

that this intelligible adaptation sprang from intelligence in the cause. The argument may be considered a branch of the teleological, the argument from means and ends; only that, in this case, the means are partly spiritual,—the instincts, and amount of reasoning power, adapted to the creature, its needs and opportunities. Why should the bee hoard its honey, more than the fly? Why not cast her wax as the aphis his honey-dew? Why should the neuter care for the eggs of the queen, or feed the young? Why should they, when a queen is lost, enlarge a cell about a young grub, and so change its food, as to develop its sex? It is difficult to conceive that, in the infrequent losses of a queen, this mode of replacing her could have been discovered by accident, or have been handed down by tradition, or inherited, when discovered. All the ingenious cobwebs of the natural selection of species and of the evolution theory in psychology seems to me, swept away by such facts as these; and we are shut up to our reference of all to the intelligent choice and plan of the Creator.

The bee's cell is perhaps an even more hacknied theme, but the argument is alike unassailable. The honeycomb consists of two sets of hexagonal cells standing bottom to bottom. The material of which they are made is as precious as the pelican's blood, and must be used with economy; the food stored in them is liquid, the cells need therefore to be watertight and strong to resist pressure. Wax is waterproof, hexagons pack close, and have the shortest sides among figures that will pack close. The cells are set, one over three; making each floor supported by three partitions running to its centre; and the floor is sunk in the centre so as to save more from shortening the partitions, than is lost in enlarging the floor. We, of course, concede that the hexagons are not perfect; that the corners of the cells are not dug out perfectly clean; that the thickness of the walls is not absolutely uniform; that the sinking of the floor varies slightly, and that the average of the measurements may not give the exact depth required for the greatest saving. Neither in

1830, when, in childhood, we first heard of the problem, nor in 1842, when we made and measured plaster casts of empty combs, did we suppose the measures would perfectly coincide with the theoretic forms. The cells are built to hold honey, a practical end, for which, approximation is all that is necessary. Perfection in execution would be a waste of time and labor, forbidden by the same divine economy which prescribes the law. The bee shows herself a better mathematician in not using seven-place tables, where three-place answer every purpose. The organization which secretes wax, and the instinct which leads her to use it in cells, hexagonal, fitted one against three, closed at the end with three rhomboids, brought to a practical working finish, slighty varied to suit circumstances, are so admirably adapted to each other, as to constitute a revelation of wise, intelligent thought, of which we cannot suppose the bee conscious. What her conscious purpose is, may be a matter of debate; but, however decided, the decision cannot affect the main inference, that a higher intelligence made these three things — the world, the bee's body, and its soul to fit each the other. Goethe is truer than his wont when he sings:

> From the cold earth, in earliest spring,
> A flower peeped out, — dear fragrant thing!
> Then sipped a bee, as half afraid;
> Sure each was for the other made.

And the bee was made for the flower in another sense. The fertilization of the flower, the perfection of the seed, and perpetuation of the species depends largely upon the agency of bees. No more conclusive book in proof of the presence of thought and design in the arrangement of the world can be found than Darwin's popular account of the fertilization of the orchids; and, perhaps, no more curious instance of a writer bringing forward a vast array of facts not to draw from them the inference to which they naturally lead, but to twist them into the support of a whimsical theory.

We have given this example of the bee, as a familiar illustration of the argument which immediately suggests

itself on witnessing the harmony between the sensible and the intellectual universe; between the world cognizable by sense, and the world cognizable in consciousness, and in the realm opened to reason and imagination by the facts of consciousness. Each species of plant finds its proper soil and climate; each kind of animal finds its home and food and mate, and lives according to its structural needs. "All is well and wisely put." Even should we limit ourselves to the nest-building instincts of animals, we should have an almost inexhaustible field of research; so numerous are the species which show a talent precisely adapted to their wants, from the hermit-crab, who takes possession of an empty mollusk's shell, to the Indo-European man, who builds his modern cities.

The bee lives upon honey, and makes good wax. Feed her upon sugar, and her wax becomes viscous and useless. The appetite for food is a striking instance of the adaptation of instincts to organization. The kid cut from the goat, killed, skinned, and the skin carried away before the little prisoner was released, selected goat's milk, in preference to other liquids set before it. How rarely even domesticated animals eat poisonous herbs, which we know are abundant in their pastures. Even foreign plants, which neither they nor their ancestors can have seen for many generations, are selected or rejected with almost unfailing accuracy. Some insects select plants of a single botanical family; the Asterias butterfly takes parsnips or caraway for its young; but, although thus varying so widely in her selection, never lays her eggs, so far as we have observed, upon any but umbelliferous plants.

Another familiar and oft-quoted example of instinct adapted to organization is found in the young mammal's power of suction. In this class of animals there is a peculiar closeness of connection between the offspring and the mother, first in gestation, afterward in lactation — a connection bearing so many evidences of intelligent adaptation that we may well excuse those who feel impatient at any denial of the cogency

of the argument. The young creature, growing at first within its mother, takes, as it were, her blood into its circulation, and is nourished wholly by it — straining it, however, through a layer of four thicknesses of fine membranes, so that there is no actual passage of red blood from one to the other, and the larger proportion of the mother's diseases are thus excluded from the offspring's life. While this is going on, the mammary glands are preparing for a connection to be renewed externally after birth. In the marsupials the young are born so young, so small, and so partially developed, that they are conveyed by the mother's tongue to the nipples within her pouch, where they cling by an involuntary constriction of the muscles of their mouths. They have not strength, at first, to draw the milk, and the mother injects it, by muscular action about the nipples, into their stomachs. As they breathe by lungs, this process would be dangerous, and probably fatal, did not a membranous funnel lead down their throats past the opening to the windpipe. In these facts, furnishing such an irresistible teleologic argument, there is also one step of marvellous instinct, that which leads the mother to receive her helpless young upon her tongue, and convey them to the nipple. That link failing, the whole process would fail. Indeed, that is the reply which we recently heard made to the whole of the morphologic and teleologic arguments. "The presence of a perfect intellectual plan and order, or harmony of events, proves nothing," we were told, "because such plan or order is the necessary condition of the existence of the universe — we cannot conceive of a universe without it." The objection might be parodied by saying that the demonstrations of the Principia and the harmony of Paradise Regained prove nothing concerning Newton and Milton, because demonstration is the essence of a book on mechanics, and harmony, of a poem. The simplest answer would be to point out volumes of weak and rough writing, and to turn the telescope upon a nebula or upon the moon.

In Mammals not marsupial the young creature at birth goes at once to the mother's nipple, and instantly begins to

draw milk. The glands begin to secrete a fluid adapted to the needs of the young; dry until that time, they at first yield a watery fluid, and then milk — a food, again, eliminating most of the weaknesses or disease of the mother's constitution, — and this continues until the little one is able to turn to the food upon which the adult lives. This coincidence in the appearance of the supply at the moment of the demand is not to be ascribed to chance, nor is it easy to trace the causal connection between the gravid uterus and the expanding mammary gland. But we have quoted the instance with special reference to the adaptation of the instinct to the organization. The act of drawing milk from the nipple and swallowing it, while still the process of breathing is going on, — both processes being entirely new to the infant, — is a very difficult one, implying a voluntary command over several sets of muscles. It is still further complicated in the Cetacea by the necessity of exercising it while floating in the salt ocean. The new-born whale or porpoise must, at the moment of birth, practise three new arts, and prove a proficient in each, — swimming, breathing, and sucking, — under penalty of drowning, strangling, or starving if he fails in either; but his instinctive genius enables him to triumph and be happy under this triple Draconian law. The human infant has but the two arts to acquire, and he shows himself as ready as any of the lower mammals. It seldom needs so much as a sprinkle of cold water on the face to set him to breathing, or more than fifteen minute's breathing in a tolerably pure air to set him to hunting for his mother's breast, and to exhibiting signs of temper and resentment if it is not given. He draws as well at the beginning as ever; nay, it is to be particularly noticed that if he does not immediately begin to practise the art, he in a very few days loses the faculty. The instinctive desire to suck is not exhibited before birth, as is evident upon the slightest thought; it is shown with great vigor within an hour after birth; and if not gratified, that is, if nourishment is given by a spoon only, it is lost in a few days, and even

the power is lost with it, and cannot be regained for years. What other explanation of such facts is credible than that this instinctive desire and ability was implanted by the Creator with a wise adaptation to the whole organization of the parent and offspring. Every attempt to explain this instinct in the manner of Bain seems to us ingenious trifling, improbable as the chimeras of Eastern fancy; but suppose them true, and grant that the organization and instincts of the mammals were gradually developed from those of the mollusks, you will still be forced to acknowledge that the wondrous harmony between the instincts and the organization must have sprung from foreordaining thought.

The bee, gathering honey, carries pollen from flower to flower, and fertilizes the ovaries. We imitate the process with a downy feather, and produce hybrids; but the bee almost never produces a hybrid. She does not like, it appears, a variety at a meal, and confines herself at one ramble to a particular species. And, rare as the accident of hybridization in plants or wild animals may be, there seems to be a provision for eliminating its effects, and the descendants of hybrids are inclined to revert to one of the original stocks. Addison has written a few lines upon the marvellous instinct by which each species of animal knows its own mate, however diverse from itself, and is never deceived by a close likeness. The instinct for selecting food, excellent as it is, is deceived much more frequently than the sexual. We have seen a dragon-fly catch a small moth, and drop it as if in disgust; toads pick up pebbles and violet-buds thrown before them. The instinct of predaceous creatures seems frequently foiled by the likeness of insects to other strong-flavored or poisonous insects. The eye of hunger and robbery is thus sometimes deceived; but "The lover's eye can look an eagle blind"; and we do not know of any instance of mongrel or hybrid issue arising from any such mistakes.

If this preservation of the order of the animal kingdom, through this instinct recognizing the mate however disguised, and rejecting all others however closely resembling, arises

from a fortuitous concourse of atoms, then the compositors might have set up this Article with a dice-box, without seeing the manuscript. The great diversity of species has been preserved unchanged and unaltered for thousands of years, by the power of an instinct acting in the mind of each creature in the countless multitude, leading each to the right selection of its mate. Development theories strive to show how these instincts were evolved out of sexless, protoplasmic cells. Grant them their eternities of evolution, and their numerous blanks in the record, covering vastly longer periods than the records themselves cover, and concede that they can show the steps by which it was all brought about; still, the exquisite beauty and perfection of the results would demonstrate that a word of infinite wisdom had created the sexes thus adapted to each other in all organized beings, and caused them to repeat, through so many ages, the wonderful intertwisted harmony of their relations.

Man's architectural talents are declared, in the Jewish Scriptures, to be an inspiration of God. He also gave us our appetites and passions, and we may expect to find in them the same evidence of wise and kind foresight as in the instincts of animals. But man is free; his soul certainly stands on a higher plane than that of the animals; and he abuses his freedom by making his appetites and passions his masters and his destroyers. Yet it is well shown, in John Ware's little book on the True Relation of the Sexes, that fastidiousness of taste and vigor of appetite, in civilized man, have been the spring of important enterprises, and the remote cause of a large part of human art and refinement. Agriculture, manufactures, navigation, foreign commerce, arising primarily from this source, bring wealth, leisure, civilization, science, literature, philanthropy. Nor should we forget what social pleasures and social virtues are connected with eating — good-fellowship, kindness, charity, hospitality, and love. The holiest rite of the holiest religion on earth is in the form of a supper, and the highest hope of its disciples is to be admitted to the marriage feast of the Lamb.

None of these things can have been a surprise to the infinite foresight; nor can we divest ourselves of the belief that these effects were intended when man was made omnivorous in diet. The natural state of man is not yet attained; it consists in a perfected civilization, when all men shall be truly helpers of each man in attaining the best ends for himself, and doing the best service to all.

As free will has abused the appetites, and brought in drunkenness and gluttony, so it has abused other passions, and brought in still deeper degradation and misery. But the divine wisdom and holiness is vindicated by the innumerable blessings bestowed upon our race through the almost unconquerable strength of that love which binds man and woman in one. The sanctities and joys of human life, lifting us above the brutes, and exalting us into communion with the heavenly spirits, cluster around the sacred family altar. The holiest affections of our nature are called out by the family relation; they owe even the opportunity of existence to the primal and strongest bond which holds together the two heads of the family, and makes them one; thus is created a home with its sanctifying influences. For the protection of homes, civil governments are established; and all the inestimable blessings depending on civil law, are thus called into being, primarily by the instincts which lead to marriage. Aristotle compared the political instincts of man to those of the bee. Yet how different is the hive from a city. The hive is but one enlarged family; the city is an association of families; in the hive there are but three varieties of individuals, in the city there are a thousand.

The laws which govern the hive are worthy of study, and repay the labor of investigation; the laws which govern the state are still more complex (we speak, of course, of natural laws, not of legislative enactments), and are equally evident manifestations of the forethought, wisdom, and beneficence of the Creator. Some investigators have confounded the results of human error and human sin with the operations of natural law, and have thus given expositions of political

economy which make it the science of despair. But those who have taken larger surveys of human history show us that all the numerous instinctive tastes and likings and abilities of men are exquisitely adapted to the production of a multiform harmony, a unity out of diversity, which ever moves forward toward better and grander results. The normal tendency of human society is toward the accumulation of greater wealth, and toward a more equal distribution of wealth among men. This tendency is thwarted or fostered by men according to their wisdom or their folly. The proper course of agriculture leads to increasing fertility and abundance — when lands wear out, and crops decrease, there has been legislative interference, somewhere, to cross the natural course of events. Thus also, under wise legislation, guarding against injustice, but laying no restrictions on transfers of real estate, on choice of employments, or on other commerce between men, wealth of all other kinds increases, subdivides itself more and more equally, and civilization and human happiness increase. Under the clear light poured by Carey upon political economy it becomes the science of hope and faith.

One more source of natural religious knowledge remains unmentioned, and we have reserved it to the last, because it connects itself so readily with the consideration of the value of revealed religion. The testimony of our fellow-men is continually a source of knowledge, and rules or criteria, for estimating the value of testimony are as important as rules for testing the results of observation and the deductions of logic. The testimony may be concerning observations of what has been seen, heard, touched; or it may be concerning belief, feeling, disbelief, and the grounds thereof. And we ground our estimate of the value of their testimony, not simply on our confidence in their truthfulness, but also on our confidence in their soundness of sense and of judgment, and on their opportunities for observation and for knowledge. The authority of witnesses is, thus, carefully estimated; and may range, in its value, from absolute worthlessness, to absolute certainty.

Nor is any sphere of human thought exempt from the authority of testimony. Even in the lowest spheres, in which it has been often said that authority is not recognized at all; it is, on the contrary, true that without constant and complete trust in the authority of testimony, none of the mathematical and physical triumphs of modern science had been possible. The greatest masters of the sciences of space and time continually build their most sublime deductions partly upon confidence in the results of inferior men, partly on the theorems of their fellow masters. It is so also in physics, and in the historical sciences. In the psychological and theological departments the value of testimony may be less, but it does not become zero. There is no break in the grand hierarchy of sciences; the higher departments are simply less fully developed than the lower.

A child accepts his parent's authority in moral and religious matters; it is reasonable that he should do so. He may in after years become wiser than his parents, and his children will accept in turn his authority. And he will, in his own higher wisdom, see that the general consent of wise and judicious persons to an opinion creates a presumption in favor of that opinion. Man is, in all countries and tribes, a religious being; which is a very strong presumptive proof that man sees some real truths in religion. This insight in religion may also be justly presumed to be, in some degree, proportionate to the religious character of the individual. The agreement in religious doctrines among the holiest and most saintly men in all denominations of Christendom, and even in Mohammedan and heathen lands, is much greater than a careless observer might suppose. Men of religious character, even among pagans, have held monotheistic views, have believed in the wisdom, beneficence, and holiness of God, in his providence over individuals, in his answer to prayer, in his displeasure at sin, in the forgiveness of the penitent, in the inspiration of our holiest and best thoughts, in human immortality, in future retribution, in the obligations of piety and charity. These glorious doctrines of the Christian faith

have been held in all ages by saintly men, even among pagans; and this concurrent testimony certainly creates a presumption in favor of their truth, and throws the burden of proof upon those who would deny them.

In all ages of the world there have appeared persons who claim a peculiar knowledge of spiritual things from their intercourse with the dead; the dead being assumed to have greater opportunities for knowledge than we. The fact that this belief in the intercourse of the dead with the living, by means of chosen mediums, has been common in all ages, creates at first a presumption in favor of its truth. But on the other hand, the most religious persons have not accepted it, or have been dissatisfied with it. Moses forbade it; the Christian church repudiated it. Its perpetual presence is due to the inextinguishable faith of man in human immortality, and to the inappeasable longing of the heart for communion with the beloved dead, to the insatiable curiosity of men concerning the future, and the unseen, and to the perpetual recurrence of phenomena above our power to explain. Its perpetual failure to command general assent and respect from the best men, arises partly from the unsatisfactory nature of the tests by which the fact of intercourse with the spirits of the departed is sought to be established; but chiefly from the total want of correspondence between the supposed testimony of the dead and our own best and purest ideas of the spiritual world. The wide prevalence, in all ages, of faith in some intercourse with the dead is a very strong argument to show that such intercourse is possible; but the utter failure of ancient or modern necromancy to obtain responses worthy the higher light into which we trust the saints have ascended, leads us to suppose that if they are permitted to have intercourse with the living it is by the way of inspiration and providential guidance, — by influences which the recipients cannot distinguish from the workings of their own minds, nor from the influences of the Spirit of God.

But the pseudo-science of this century cries out against

any faith in spiritual influences, either from departed friends, or from angels, or from God; declaring that all thought and feeling move by invariable laws of the association of ideas; and that free will both in man and in spiritual beings is thus rigidly excluded. But such an invariability of psychologic law is a mere assumption, not warranted by anything in the nature or necessity of science, and absolutely forbidden by consciousness, and by the truths implied in the moral judgments of conscience. The doctrines of necessity, of whatever school, are fallacious inferences from the infinite, and certainly can have no force in the present case. The spiritual influences of angels and spirits could just as readily be in accordance with law as the influences which we are constantly receiving, unconsciously, from parents, teachers, and friends. If arguments from the infinite nature of God, and the invariable character of law, were permissible at all, we should certainly draw very different conclusions; we should argue that to infinite wisdom and infinite power, the inflexible and invariable is perfectly plastic, and leads to any result desired by the all-loving God. Is not the Almighty as free in his treatment of us, as we in the treatment of our children?

But the very nature of the organized bodies in which we dwell, disproves this assumption of invariable law, and demonstrates that the house is open to receive angels' visits. When we can conceive it possible that any inventive skill ever could make a machine, which (to expand Diderot's comparison) should be constantly forming letters, and arranging them, without intervention or guidance, into all the great books successively that have adorned sacred and profane literature, science, history, law, poetry, and the drama, from the beginning to the present; then we may attempt the more difficult conception that any general laws whatever can have produced the myriads of specific forms in plants and animals; each showing the guidance of thought as distinctly as any work of human art, and all bound together by intellectual connections and harmonies into one divine literature of Nature. In every organic form, and in the highest of them, the human body,

there is evidence of a constant spiritual guidance of the molecular forces to bring about a specific organic result. Whatever be the nature of that guidance, whether the will of God, or the unconscious action of the Infinite Spirit, or the unconscious action of our own spirits, it is certainly not the action of the molecular forces alone; there is a guidance of those forces to make them build and repair an individual and unique form; the guidance cannot by any strength of imagination be referred to the forces themselves; yet it is not in opposition to or violation of their laws; nor inconsistent with the supposition of spiritual laws governing our conscious life. This guidance of molecular forces to the building up of a body peculiar to the individual, proves that spirit is ruling within us, without our conscious recognition of its presence; proves, therefore, that the doctrine of inspiration by higher spirits, and by the Spirit of God, manifesting itself, and known only by its fruits of purity and love, is not inconsistent with the truths of physiology or of psychology.

By the very hypothesis of such inspiration, it is assumed to be undistinguishable from the action of the laws of association, and from the promptings of genius. Genius is inborn ability, inherited from ancestors, and supposed to be modified by ancestral culture. But when a man of poetic genius, suddenly, without conscious effort or premeditation, utters a new poem, that unlocks a thousand hearts, or the mathematician, in like manner, when thinking of something foreign to his science, is startled by a flash of heavenly light, revealing a new geometrical truth, putting the keys of nature's secret treasure-houses into men's hands; or a humble Christian struggling under temptations to sin, under doubts and fears, dreading lest all shall indeed end in eternal silence, frost, and darkness, suddenly feels his heart thaw as under a divine sun, beholds the mists roll away, and a world of transcendent spiritual beauty reveal to him his own destiny as a child of the all-loving God, and his soul swells and thrills with the sense of that glorious liberty; when men are thus lifted in a moment far above the level of their ordinary experience, it

is, and may forever be, impossible for them to decide to which of three causes to attribute the happy change; to a physiologic action on the brain giving it unwonted freedom in response to the spirit; to unwonted energy in their spiritual action compelling the brain to unusually prompt obedience; or to some inspiration from unseen spirits, and perchance from higher sources, from the ascended Saviour, or from the Almighty. There is nothing in the truths of physiological or of psychological science that renders this third supposition untenable.

The light of nature carries us, however, but little beyond the being of God and his attributes. Those attributes being infinite, our deductions from them are unsatisfactory. From the divine justice, for example, and the divine holiness, we may argue that sin is by nature unpardonable, and deserves infinite and eternal punishment. Yet from the same attributes, looked at from another point of view, it has been inferred that sin must be temporary and all souls finally restored to Eden. Nothing can be demonstrated from such premises; we are left to hope and fear, and to look to Revelation for clearer light.

Thus also the doctrine of the Holy Spirit cannot be demonstrated; it can simply be defended from the objections of pseudo-science, and shown to be by nature probable. Its probability arises from the fact that our souls are shown by the morphological and teleological arguments to have been made in the likeness of God, and our filial and paternal affections are to be trusted as some indication of his paternal character. This probability is strengthened by the craving which the religious mind has for personal intercourse with God; a desire which is universal among the best minds, and a desire proportioned to their holiness of character.

But whether the higher light, awakening the soul to a renewed consciousness of its divine origin and kindred come from genius or from inspiration, it gives to its recipient a certain measure of authority as a witness to religious truth. Men are frequently competent to understand and to test and

prove truths which were far above their power of original discovery. An algebraic formula may be put to the test of numerical substitution by one whose knowledge of algebra is wholly insufficient to discover the formula; in like manner, men may recognize the beauty and holiness of the best utterances of saints and prophets, without being able, unaided, to say, or even to think, things so good. They recognize the holy and divine character of the prophecy by the echo it awakens in their hearts, and by its evident justness to their experience.

There is also an important sense in which a man may be an authority to himself, appealing from Philip drunk to Philip sober. The mathematician may forget the steps by which he formerly demonstrated his theorem; he may through temporary indisposition be unable to retrace the steps; and yet he continues to believe it on his own authority. I have known also several persons who when in health had a cheerful faith in God and in Christ, but who when unwell became sceptical. But three of them had the reasonableness to say, "the sick man ought to defer to the judgment of a man in health; what I see in my highest state of health, I will not doubt because I fail to see it when my sight is blurred and dim and heavy."

We have spoken of the presumption in favor of believing the united testimony of good men in all communions, in all ages of the church, and we might add that the agreement of the saints of all times and all countries, even in pagan lands, in believing many of the great doctrines of monotheism, creates also a presumption that the guidance of the Spirit of truth has not been wanting. But even in cases in which the multitude of the saints has not spoken, even on points of rarer interest, or of deeper and more peculiar experience, the voice of a man of holy character is entitled to weight; it creates a presumption in favor of the truth of what he says, strong in proportion to his holiness, and to the glow of divine love within him. The saying that love is luminous is attributed to Swedenborg; it embodies a pregnant truth,

acknowledged, in some form, by wise and holy men both before and since the Apostle John, who says, "He that dwelleth in love, dwelleth in God, and knoweth God."

While the law is undoubtedly true that feeling and perception, as states of consciousness, have some tendency to exclude each other, and that a man may therefore be blinded by his feelings; it is also true that these states always to some extent co-exist, and neither can remain in the total absence of the other. There is no clear vision without attention, and no attention until interest be aroused; and there is no living interest in the spiritually beautiful, the holy, without adoration. No man who is cold to the issues of the late civil war, and without sympathy in the trials and sufferings of ordinary life, can give a just judgment of the statuettes of Rogers. No man without interest in dogs and other animals can justly estimate Landseer. No man who is unmoved by music is a competent judge of Rubinstein or of Wagner. And of what value is a criticism upon the labors of Agassiz or Bache or Peirce from a man who is without enthusiasm for any of the mathematical or physical sciences.

It is evident that while enthusiasm may mislead, and too great a depth of feeling blind the judgment, it is even more emphatically true that coldness must lead to injustice; and that aversion or dislike to a subject will prevent the formation of correct opinions concerning it. Over-zeal leads to extravagance of opinion; coldness is deadness and consequent blindness; while the highest healthy enthusiasm gives the clearest sight. If then human testimony has any weight with us, we should give, other things being equal, the greatest weight to the testimony and opinion of those interested in the question, and moderately enthusiastic upon it.

If now we apply these self-evident remarks to the question of theology, we shall see that it is only those interested in religion who are likely to form a sound judgment on religious matters. It is perfectly reasonable to ask those who are not devoutly inclined to give at least great weight to religious opinions upon which the majority of more devout

men agree. If, for any cause, I am inclined to doubt the being of God, the efficacy of prayer, the immortality of the soul, and the forgiveness of sin, and to sink into acquiescence with the notion that man perishes with death, then I ought to remember that those whose lives have given the best proof of a religious nature, and who have been most thoroughly and practically interested in such questions, have, with great unanimity, proclaimed these doctrines, which I am doubting, to be the most certain of all truths.

In the hours of deepest need, when our holiest longings are awakened, God is not an unknown and unknowable mystery, but a Father; of unsearchable wisdom, of boundless love, of unspeakable tenderness; he is the only judge who can decide what suffering and disappointment, what agony and bloody sweat may be necessary for us in this life, to fit us for the unutterable joys prepared in the world to come, for those who love and trust him. The fact that in our hour of deepest emotion and of most thorough awakening we cling to these common tenets of holy men, gives to those tenets a new and strong probability.

We were recently reading to a friend the report of a scene in the National Academy of Sciences. The Superintendent of the Coast Survey had poured out with great earnestness a chapter in his "Linear Associative Algebra," which he deemed of the highest importance; but it was necessarily clothed in language perfectly unintelligible to a majority of his hearers. When he had closed, and all were sitting in silent bewilderment, Agassiz arose and said, in substance, "I must confess that I have not understood one word of this communication, but I have heretofore had such ample reasons for believing in the speaker's clearness and soundness of thought, that I accept what he has now said as undoubtedly true, and unquestionably to become of great practical value." When I had finished reading the anecdote, my friend surprised me by saying, with decisive clearness: That is precisely my position with regard to Jesus Christ; Jesus assures me of the paternal character of God, and of the immortality

of the individual soul; how he gets his knowledge, I do not know; I cannot see those truths clearly written on the world, nor on the soul; without Christ I could only hope they were true; but I have seen, and do see, so many proofs of the wonderful wisdom and clearness of thought and holiness of character in Jesus Christ, that when he says that he knows they are true, I believe that he does know; theorizers may debate as they will concerning the character and degree of his inspiration, in what manner or sense he was an incarnation of God, it is enough for me that the whole record of the New Testament gives me perfect faith in his wisdom, his holiness, and his truth; so that when he says that he knows God is our Father, I know that he knows it, and therefore I know it. Nor was my friend unwise, much less unreasonable, in thus accepting, upon the authority of competent testimony, truths consonant with the intuitions of his soul, but beyond the reach of his faculties to attain.

THE

BIBLIOTHECA SACRA.

ARTICLE I.

THE NATURAL SOURCES OF THEOLOGY.

BY REV. THOMAS HILL, D.D., LL.D., FORMERLY PRESIDENT OF HARVARD COLLEGE.

We propose to recapitulate, in the present Article, the sources of religious knowledge which, in our four preceding Articles, we have found trustworthy; and in order that the reader may carry away a positive impression of faith, rather than of controversy, doubt, and denial, we will, for the most part, omit in this recapitulation any allusion to the modern forms of unbelief, which in the previous Articles we have endeavored to show stand on wholly untenable foundations, drawing nearly all their conclusions from premises which attempt to define the infinite. Falsely accusing Christian theology of this logical absurdity, the opponents of faith in the Christian scriptures rush themselves headlong into the error which they condemn; arguing from the infinite, while acknowledging that we can safely argue only to it. We have in the preceding Articles shown this fundamental vice in the logic of unbelief, and will endeavor to avoid either alluding to it, or carelessly falling into it, in the present recapitulation.

The grand fundamental truth, on which all human philosophy and all human science must be built, is that man has the power of perceiving things and their relations; perceiving them either by outward sense, or by inward apprehension.

For this power of perception we may use the term sight; we may say that we see whatever is perceived by the bodily senses, the eye, the ear, touch, smell, taste; we see the external world and its sensible properties by outward sense; and we may say that we see by inward sight that which is part of our own consciousness, or that which is abstract and known only by reflection, or conceived by the imagination.

We come into conscious being possessed of these powers of outward and inward sight. In our first survey of the universe we see the difference between our own self and the rest of the universe; and the first grand division in our classifying the objects of perceptions, is into the me and the not-me; myself and nature. Very early in our conscious life we again divide the not-me into my body and not my body. My body is subservient, in part, directly to my thought and wish; what is not my body is in no case directly obedient. It obeys only on compulsion applied in some manner through my body. A further step is taken very early: we discover the existence of other selfs in the world, each with its appropriate body, obedient to it, by which it obtains, as we do, a power of compelling a partial obedience of matter to its will. We thus learn the existence of our fellow-men, dwellers in organic forms, and partial lords of the material world. We see that the material world is more like the human body than like the soul. Nay, before adult age, we class the body in with matter, and make the primary division to be into matter and spirit. We recognize the fact that spirit is, to a great extent, lord over matter; and we learn that the most careful experiments demonstrate matter to be wholly inert. Yet we see matter in motion when no human spirit is acting upon it: the very stars of heaven are in motion. We rise at once to the conception of a mighty spirit, ruling the world as we rule the small portions of it under our control; and reason pushes us to the conclusion that there is no limit to his power — that he is not only mighty, but Almighty.

Thus readily is the human intellect led to perceive the existence of Almighty God, and the likeness to him in which

man is created. But the notion thus obtained is very meagre; it presents the Deity only as the Almighty, and does not satisfy the longings of the heart after God. While man is in a rude and savage state, and his better affections are largely dormant; while the bodily appetites and passions, together with the lust for power and the greed for wealth, fill constantly the sphere of his consciousness, he does not feel the need of any better idea of God than this rude symbol of a chieftain or king mightier than any earthly ruler.

But in the progress of higher culture, and especially in the culture of our Christian civilization, as it has been affected for centuries by the sublime teaching and humanizing influences of the gospel, men begin to desire some better knowledge of their Creator, and a longing for communion with him arises. They look eagerly in every direction for further light concerning his being and character. They would fain test and legitimate to themselves, if possible, the sweet words concerning God which they find attributed to Jesus, and to those who follow the light of that morning Star, that Sun of Righteousness. In this search for trustworthy natural sources of theological knowledge they look within; they study their own intellectual and moral powers, and the control of the will; in each department of their inner life they find some rays of this light for which they are longing.

The intellect, beginning with the consideration of that which is plainly known and thoroughly understood, can go but a few steps in any direction without finding itself confronted by an absolutely impenetrable wall of mystery. It recognizes the existence of spirit, yet finds that it knows spirit only by means of a few phenomena, the laws of which are but partially comprehended. There are indications that our own souls and minds are reservoirs of hidden, reserved, even of unknown, and perhaps even of unsuspected, powers. There are clear proofs that the soul within us undergoes many modifications, and accomplishes many effects which are not brought to the light of consciousness at all. Yet these hidden depths of our being, bringing up at length their effects to the

surface, show those effects to be reasonable, exactly as though our reason and understanding had worked within us much deeper than we knew. But we cannot ascribe the guidance of the motion in these abysses of our nature to our own wisdom; we find, therefore, in the rational results of the movement, evidence of a divine power within us, controlling to some extent, by laws hidden from our sight, the inmost springs and currents of our being.

Moreover, we find the intellect striving incessantly after the infinite; pushing its inquiries into the past and coming eternities, inward to the centre of the atom, outward beyond the physical universe. The intellect refuses to find any here or now. Here has no limits; it is anywhere, it is everywhere, and its limits are nowhere. Now has no duration; all time is past or future, and the past and the future have no limits, save as they limit each other by crowding against each other in the non-existent now. The intellect, thus refusing to be limited in thought, cannot believe itself limited in duration; it asserts its independence of time; its dwelling-place, whence it thus surveys the cycles of time, is in eternity; it asserts its own immortal and divine nature; yet it is humbled in the consciousness of its ignorance, and even with the vaguest recognition of the presence of thought in the universe, perceives that that thought infinitely transcends in wisdom all human powers. Thus the first survey of the intellectual powers discloses new testimony to the attributes of the Deity — He is allwise as well as Almighty.

Searching then the affections, we find them betraying the like infinite nature. The very passions and appetites of the body rage within us like stormy seas, and sometimes seem entirely too vast for the little frame in which they are implanted. But a closer examination shows this to be an illusion; we are blending spiritual powers with carnal affections, are deceiving ourselves, in attributing to the flesh, powers that come from the soul. Not so when we pass into the higher region of the affections — the love of truth, the love of beauty, the love of friends, charity towards men, reverence for men who are

great and good, gratitude toward our benefactors, or toward benefactors of the race. In these higher affections, which bind us to our fellow-men, we find no limits necessarily affixed. All the highest genius of our race has been exhausted in the vain endeavor to express the highest sentiments of our nature; and while we gratefully receive these attempts at the hands of the poet, the orator, the sculptor, the painter, the composer, and even bow with reverence before the genius that has expressed so much, we, nevertheless, all feel that within our hearts are glowing deeper things than any that have been uttered. We could not rival the man of genius in his utterance; but were his friends, instead of praising his manner of expressing himself, to praise his depth of feeling, we should instantly feel offended, and cry with Hamlet to the boasting Laertes:

> "I too,
> I loved Ophelia, forty thousand brothers
> Could not ..... make up my sum."

Nor forty thousand men of genius express all my feeling. No sculpture, no painting, no oratory, no poetry, not even any music, ever expressed all the depth of feeling in the human heart. Not even any music, do I say? not even the sacrifice of all personal hopes and happiness in the endurance of poverty, toil, suffering, and agonizing death, has expressed the whole depth of love in the hearts of many of those who have gladly endured all things for the sake of wife or husband, parent or child, or for country, or for humankind.

This heart, so strong in love toward others, has also an inextinguishable desire for love in return; it rejoices in the approval of good men, it is glad with the sympathy of its beloved; but it also looks trustingly up and longs for forgiveness and blessing from God. All its great tides, bearing up our hopes and joys and sorrows, flooding every inlet of our being, and daily renewing our whole life with their motions, are perpetual witnesses to the existence of the great centre of attraction, the Author and Inspirer of all forces. The love of God is the only fountain copious enough to supply such a sea.

The intellect, surveying these wondrous manifestations of the human heart, sees at once that it is absurd to ascribe such effects to any petty mechanical causes in the organization of the human body, and that the only rational conclusion is to refer them to a Being whose unfathomable love is commensurable only with his almighty power and his boundless wisdom.

But this survey of the internal world of consciousness, leading us from our recognition of the will to the recognition of the Almighty, and then from the nature of the intellect and the heart leading us, justly and with certainty, to ascribe wisdom and love to him, begins now to reveal to us features of the world within, and call our attention to points in the world without, which both confirm our first inductions and open to us new consequences and new aspects of the truth already attained.

We have seen that we are not alone in the universe, that there are other men around us, that there may be other conscious beings than men, and that certainly there is one Being above all, in whose likeness, to some extent, we have been formed; since he manifests power and wisdom and love unlimited, as we manifest them faintly and feebly. In the contemplation of this spiritual universe, this goodly company of men and angels, made in the image of God, we perceive that certain relations exist, and must exist, between them; that they have been made with reference to each other; and that out of this order of relation to each other and to their Maker, springs an obligation, a code of duty, binding us to certain courses of action, feeling, and thought; forbidding others. We thus perceive that there is a difference out-ranking in importance all those which we have previously considered; it is the difference between right and wrong. We demand of ourselves conformity to the right, we condemn ourselves if we choose the wrong. We carry this judgment of ourselves into our most secret thoughts and most private hours. We are ashamed of ourselves, and condemn ourselves for cherishing unworthy thoughts, even in solitude; feeling

that even for such secret sins we deserve, and shall receive, punishment. From whom? We push this question, and find that the voice of conscience must be considered the voice of God within us; it is his witness set in our hearts to remind us constantly of his perpetual knowledge of us, and the eternal justice of his dealing with us. The Being who created all things, whose existence and power are necessary as the first cause of all, whose wisdom is the only explanation of the myriad harmonies of the universe, and whose inspiration is the only source of holy affections; this God of wisdom, power, and love, must also have been the ordainer of those relations between spiritual beings, which first revealed to us the difference between right and wrong. God ordained those relations, gifted us with power to see them, with the moral sense that feels obligation, and reverences holiness; he must himself be all holy, and strict to mark iniquity.

Our powers are his gift, we can, therefore, neither see nor imagine aught greater than he. Stimulate our powers to the utmost, they cannot rise above the Being that made them, and as we can readily form the idea of perfection, that is of a being to whom no new excellence could be added, and in whom no existing excellence be increased, God, our Maker, must be perfect in holiness and in every attribute. He is, therefore, just, merciful, true, and faithful. Nor can our faith in these perfections of the Deity be readily shaken, they are held, explicitly or implicitly, by all men of sound mind as the very basis of all our daily thought and action. We once heard one of the leading mathematicians of the world declare that our only conception of the stability of nature was founded, unconsciously perhaps, in our faith in the divine veracity. "How do I know," said he, "that the sun will rise to-morrow? I know it as I know the invariableness of other natural laws, because I know that God is true. My conviction of the faithfulness of God is the basis on which I build my confidence in the permanence of the physical laws. God has made this world a schoolhouse for man, and man's education could not be well carried on if there were fluctuations in the order of nature."

In our survey within the soul, we discover that we have the power of seeing time and space. Their existence is implied in the first phenomenon of matter, that is, in motion; and, indeed, since both space and time are without bounds or parts or sensible properties, we should not have seen them but for motion, which calls our attention to them, and reveals to us our power of dividing both space and time into parts at our own will by a mental act, and considering the relations of those parts to each other. Then we discover that these intangible entities, having no power either of spirit or of matter, are so perfectly within the grasp of our intellect, that we can make symbols, or verbal propositions, defining perfectly certain of these relations, and from these definitions, answering perfectly to the reality in space, we deduce necessary consequences. Thus space becomes the subject-matter of geometry, and time of algebra, while the abstract relation of number furnishes arithmetic, the earliest branches of knowledge which attained a mathematical condition; using here the word mathematical in the sense given to it in Peirce's Linear Associative Algebra. Out of these was evolved a science of quantity and a science of quality, mathematically treated; that is, using perfect definitions, and thus drawing necessary conclusions. All these mathematical sciences of space, time, quantity, and quality are founded upon the direct sight of space and time — the sight of space and time, not in the world of matter, nor in the sphere of consciousness, but enfolding matter and finite consciousness, the conscious succession of thought calling our attention to the existence of time, and the motion of matter calling our attention to the existence of space; but space and time being themselves independent of matter and of our finite spirits.

Yet the conclusions mathematically reached, concerning space and time, may, in one sense, be called *a priori* truths; they rest upon a division of space and time by our power of thought; and not, to any great extent, upon the nature of space and time in themselves. In themselves, and undivided by thought, these elements are so devoid of interesting

properties that they give us few ideas. The conceptions of geometry and algebra, and of the various forms of the calculus can therefore be justly considered pure creations of the human intellect. The points in the circumference of a circle are distinguished from points within and points without the circle only by an intellectual act, fixing them at an intellectually appointed distance from an intellectually established centre. Thus with the points constituting any other geometric locus, or the instants constituting a pure algebraic equation. Yet some of these pure intellectual creations of the human mind have been found embodied in every atom of matter and in every combination thereof; many others are found embodied in special parts of the material world; some of them being of a high and difficult order. Furthermore, in very many parts of this physical creation we find ideas embodied, which, although not among those actually reached by the *a priori* road, are of the closest similarity to them; and in all parts of the universe we see manifest indications that ideas are there which may at some future day be grasped by human minds. The whole encyclopedia of the physical sciences is, indeed, only a statement, in human language, of the ideas which have already been discovered embodied in the physical universe. The whole army of scientific investigators are, whether consciously or unconsciously, pursuing no other end than the attempt to unfold ideas expressed in the material universe, and not yet read by man.

What is the meaning of this recurrence in nature of our *a priori* thought? There can be but one conclusion, that the Maker of the world made the soul in his own image, and gave us some feeble power of seeing space and time, quantity and quality, as he sees them; that our geometry is all included in his perfect knowledge of space.

But it is not the physical sciences alone that bear this glorious testimony to our divine kindred. The domain of science is extending beyond physics into political economy and government, education and psychology; and the aim of science is everywhere the same; she first seeks facts, then to

understand them, finally to be able to draw necessary conclusions; she proceeds on the assumption that everything is intelligible, that everything is governed by some law which may be comprehended. But what is this assumption which every scientific student must make, and without which no science were possible, what is this assumption that everything can be comprehended, but an assumption that everything was comprehended before it was made? Space and time and matter are as inert and powerless intellectually as physically, and the intelligible order of the creation could have sprung only from spirit, that is, from a Being to whom spirit is more akin than matter or space or time can be.

Science is the unfolding of the harmonies of creation, a reverent pointing out of the wisdom and self-consistence of the creative thoughts of God. The whole universe is, to science, a combination and expression of philosophical ideas; these ideas include many of those which were once supposed to be their own pure creations; they include also many which will probably be discovered by the *a priori* road before they are perceived in the world. Indeed, Whewell, one of the ablest of English writers on the philosophy of science, maintains, in a book of great learning, that this is always the actual process in the discovery of a natural law; namely, that the facts never give the law, but only suggest it, sometimes very dimly, so that the mind really invents it as hypothesis and then verifies it by comparison with facts.

But the world is not only an expression of thought, it is an accomplishment of purposes; it is an extensive system of means and ends. Certainly in organized beings, and, we think, in inorganic nature also, we find effects taking place, "not as the necessary consequences of what went before, but as the necessary conditions of what is to come after, thus demonstrating foresight, and therefore mind — a plan, and a mind working according to it." The heavenly bodies accomplish changes on the earth, absolutely necessary for the vegetable and animal life upon our planet; in imparting heat and light, electric and actinic forces, and distributing them

aright; in providing also for those movements in the ocean, and in the atmosphere, which produce the changes of the weather, the alternate sunshine and rain, so necessary for every form of terrestrial life. The parts of the earth itself are adapted to the same ends; the proportion of land and water, and of the various elements; the elevation and slope of the continents, the quantity of the atmosphere; these, and other adaptations, fit the earth precisely for the home of its living tribes. And not merely for animal life, — the nature and proportion of the elements fit the planet to be the abode of civilized and intellectual men; all is arranged in such a manner that this earth becomes a home, a workshop, a playground, a schoolroom, a temple, for the human race. Then, in the smaller field of organic structure, for the support of which all nature is adapted, we find the plants and animals subserve each others needs, the machinery for the continuance of each species after its kind is perfect, the parts of each individual make a harmonious whole; each part is a perfect means for accomplishing certain ends. Most marvellous among these ends is the conveyance, in the animal, of sensation to a conscious spirit; accomplished by the marvellous organs of the senses, among which the eye and the ear are complicated with many nice adjustments of parts to a common end.

Nor do we see how any sound logic can avoid the conclusion that these innumerable adaptations of means to ends were adaptations for those ends; that although it is impossible for us to reconcile the infinity of God with the conception of working in detail, of planning separate adaptations; yet the force of the facts is irresistible, and we must suppose the infinite God foresaw and predetermined these ends to be accomplished by these means.

Furthermore, we recognize, in general, an adaptation of the spiritual gift in each animal to its organization. The animals who are especially fond of flies, for example, are those which have especially good means for catching them; the swallow his swiftness, and the bristly corners of his

mouth; the bat similar means; the tortoise his flexible neck and the ability to move it with a sudden jerk; the toad his darting tongue; the dragon-fly his ability to back, rise, fall, or go sideways, instantly, while in flight; the spider his web; the ploiaria his sharp wrist-spurs and talons. Thus throughout the whole animal kingdom; thus in all the variety of national and individual character in man, in general, each one finds pleasure in success; likes to do what he can do well, and can do well that which he likes to do. This grand truth, illustrating both the wisdom and the loving-kindness of the Creator, is made only the more strikingly true by the occasional instances in which, in individual cases, the adaptation is not as perfect as usual.

The universe is the embodiment of ideas, and the adaptation of a system of means to ends; one of those ends is the furnishing to us men an opportunity for the exercise of our higher powers. Among our powers of perception we find special senses, giving us special reports concerning the world of matter and motion. The eye reports to us not only those motions which we recognize at once as motions; but also motions which, for many centuries, we called colors, without knowing that they are motions. Thus also the ear reports to us motions, which we called sounds, without knowing that they were merely modes of motion, although we knew that they were accompanied by motion. The general nerves distributed over the body reported to us still other vibrations which we called heat, and failed to recognize their character as movements. We cannot dispense with these names of light and color, heat, electricity, chemical action, and sound. These various modes of motion, although all motions, are various; each produces its specific effect not only upon our senses or feelings but upon sundry inanimate objects. The simple arithmetical idea of the ratio of four to five, combined with the idea of two series of equidistant pulses in the air, produces no effect upon us as mere ideas. We could not foresee on any *a priori* ground what the effect should be. But express these ideas not in words, but by actually making two

series of pulses, their absolute frequency being within the limits say of fifty and five thousand to a second, and the relative frequency in the ratio of four to five, and we at once obtain a peculiar effect upon the ear, a musical concord; an effect which cannot be represented to the mind as an arithmetical ratio nor as a mechanical pulsation; which cannot be imagined until heard, nor imagined other than as it was heard. In this chord of the major third we distinguish three kinds of beauty: first the beauty of tone, arising from the equidistance of the pulses; second, the beauty of the quality of tone arising from the form of the pulsations; thirdly, the beauty of the harmony, arising from the relative frequency of the pulsations in the two series. In exceedingly simple cases of beauty men have been able to discover part of the causes of beauty; as in the present case, that it arises from the expressions in the elastic tremors of the air of simple arithmetical and geometrical ideas not recognized by the ear as such, but only recognized as purity of tone, coloring, and concord. In more complicated cases of musical expression, where melody and progression of chords join in producing the effect, we are wholly without a clue to the meaning of the beauty or the cause of the expression. Yet we cannot esteem it accidental. The language of tone; the pathetic effect of one modulation, the joyous expression of another; the inspiriting power of martial strains, the touching emphasis of a song of the affections; these are acknowledged and felt by men of every nation; nay, even the animals are to some extent under their influence. No sound philosophy can put such facts aside as of no meaning. There is evidence here that the Creator of man knew how to produce the highest effects by the simplest means; in simple arithmetical ratios of vibration he has foreordained a means of pouring out all the varying depths of passion and sentiment from the thoughtless carelessness of our adopted national air, to the hellish fury of passages in Cherubini's Medea, or to the rapture of the ransomed worlds in Beethoven's Mount of Olives.

The same argument may be drawn from other forms of beauty, and other modes of expressing passion by means of art, as by form and color. They also are primarily simple forms of expressing geometrical and algebraic ideas, symmetry in space and time. But these ideas are not always recognized by us as such; they are deciphered into an intellectually intelligible form only in the simplest cases; in higher cases we feel the beauty, but do not recognize the law by which it is produced. And in all these cases man is not only capable of feeling the beauty, he is gifted with a subordinate power of reproducing it; first by copying the forms in which it is expressed by nature, and afterward by the creation of similar forms, guided by the spirit or feeling inspired by nature, but without an intellectual perception of her law. In the case of music, this production of new forms is carried to a point of perfection incomparably higher than that of the natural model; so that it is difficult to find in nature the original suggestions which have led to the sonata, the symphony, and the oratorio. This artistic genius which creates the statue, the picture, the overture, is in some senses a higher power than that of the intellect; it is in every sense a spiritual, exalted work, and commands reverence and affection toward the artist.

Now the universe is not only a combination of ideas and of means to ends, it is a work of art; and that of the highest order. Musical expression is by no means wanting in it; the winds and the waves, the cries of animals, the song of birds, all have their powerful musical expression. But in beauty and expressiveness of form and coloring the natural world far exceeds the best efforts of the painter and the sculptor. A glance of the living eye lighted by a living soul within, when that soul is filled with deep and earnest emotion, makes even the eyes of the wonderful child at Dresden dull. One October afternoon throwing its golden light over our New England hills surpasses all the possibilities of mere pigment under the hands of the highest conceivable genius. We cannot believe that these exquisite effects of the face of man and of the face of nature were not foreseen by the Creative

Mind. The perpetual presence of beauty in all the forms and coloring of natural objects and of the human face, most beautiful of all, bears perpetual testimony to a wise and loving God; it calls upon us not only for reverence, but for gratitude and love toward him.

There are artists also in another sphere, who create ideal character, and hold in the drama, or the tale, the mirror up to human nature. The highest admiration is accorded to one who creates new personages, and by his life-like descriptions of them, or of their words and actions, makes them realities to us. The evidences of his skill are found in the unity of each character introduced into his work, in the excellence and the variety of these characters, and in the harmony with which the action of each contributes to one final result. But in all these respects human society and human history form together an artistic work of the highest character; and the long course of ages exhibiting its innumerable individuals, many of wonderful excellence, and its numberless by-plots leading to separate issues of great interest, is still evidently ever tending toward some higher and higher final accomplishment worthy of the long delay, and to the production of which each of the various parts has been adapted. Herein, therefore, are marks of the creative wisdom, peculiar and altogether different from those to which we have heretofore alluded.

It is, however, vain to endeavor to condense into a single brief Article an enumeration of the varieties of argument, each capable of large expansion and illustration, by which this main doctrine of natural theology is established. That man is made in the image of his Creator, and may justly argue from his own thought and feeling, care being taken to argue soundly and justly, to the attributes and purposes of God; this is a conclusion reached by many lines of induction, of which we have alluded to but a few, and against which we can find no solid or valid argument; no argument which is not rendered worthless by the admission of infinity into the premises in an inadmissible manner. When from this con-

clusion, or from the purposes and attributes which we are, in conformity with it, led to assign to God, we attempt to draw inferences, then we must beware lest we also err in reasoning from the attributes of an infinite being. We must ever remember the distinct warning given us by the earliest of Christian philosophers, who, a full thousand years ago, warned us that the first and only thing that can be known of God, is that he cannot be known, and that "Deus ipse nescit se, quid est, quia non est quid." We can say that he is wisdom and power and love only because all these dwell in him as their cause and essence; but all our conceptions of these attributes are but as nothing in respect to the infinite fulness of their being in him. In other words, the induction which correctly leads us to assign but one cause for the universe, and in that cause to place infinite perfections, and among them perfect wisdom, holiness, justice, and love, does not enable us to decide in all cases what those infinite attributes imply. They do imply that no action of God, no course of events in the universe, can, in the long-run, work injustice, or do a real injury to the children of God; but this conclusion is drawn from the nature of the attributes, not from their infinity. We may be certain that God can and will hear and answer prayer, and make all things work together for good to them who love and trust him, and accept his mercy offered in Christ our Lord. We may be certain also that he will not leave wickedness unpunished, but will render to every man the just deserts of his sin. Reason goes so far with unwavering step. But shall we argue from his infinite love that he must bring every creature finally to eternal happiness; or from his infinite justice that he must assign the incorrigibly wicked to eternal and infinite torment, we should be arguing from the infinite, and our argument would not be sound. The question of eternal punishment, or of future universal restoration, can be settled only by revelation, if settled at all.

The light of nature is in many respects clear, and leads to very valuable conclusions; and we may devoutly thank God

that it is so. But we are the children of the Infinite One, and we have within us illimitable desires; the clearer the light we have, the more we watch for the breaking of the perfect day. These inductions concerning our likeness to the Creator, and the inference of our own immortality which immediately flows from them, makes us long only the more earnestly for a closer communion with him; for a more direct spiritual contact with him dwelling in our hearts. We pray that he would guide our thoughts, purify our affections, awaken in us holier desires, inspire with new strength our feeble and corrupted will. Abundant reasons are given us for believing that these prayers are acceptable, and when offered in earnest sincerity are accepted, and bring holier influences into the suppliant's heart. And yet he is ever longing for more light, and trusting that, after the night of death, a morning shall come refulgent with more heavenly glory.

The Christian saints furthermore believe, and we devoutly believe with them, that this great light which is to break upon us when the shadows of death flee, has already dawned and spread its reviving light from over the hills of Galilee. They find in the person of Jesus of Nazareth a light clearer than the noonday sun, and revealing to us more truth than the light of nature ever could reveal. They recognize in him an image of God, answering far more perfectly than any ideal being whom we could portray to our best conceptions of perfection. The ineffable tenderness of his love towards men, the gentleness of his dealings with sinners, give men a confidence which no mere words could give, that the awful sacrifice on Calvary was indeed for the many, for the remission of their sins; and that he who thus suffered, rose again, to pour down upon his church the manifold gifts of the Spirit.

It has not pleased him to make further revelations of truth concerning God than was necessary for the salvation of sinners, — and upon those truths, or upon nearly all, we had a glimmering light before Christ came; but he has made the important truths plain and certain; such truths as these

—that God is, through Christ, reconciling men unto himself, that he will forgive those who trust in Christ for forgiveness, and turn away from sin; that he will inspire such with a new power to live holy and useful lives; that both the Father and the Son dwell in the heart of a penitent believer and fill him with the Holy Spirit that leads to victory over the tempter, over sin and death. The history of the Christian church abundantly witnesses the truth of these promises. In that church, despite its manifold corruptions, failures, and sins, there has always been a large body of men distinguished for excellence of private character far beyond those who have been alien from the church. With this excellence of character has been joined clearness and strength of religious faith. And the last natural source of theological truth which we shall mention is the experience of saintly men. The fact that in all communions of the Christian world we find the holiest and purest men substantially agree on the great doctrines of religion and morality, and that the best and clearest thinkers of other great religions agree in the same essential doctrines of central Christianity, is in itself a very strong argument in support of those doctrines; an evidence both of the truth of these points in natural religion endorsed by Christ, and of the value of his endorsement.

ARTICLE III.

THE FIRST CHAPTER OF GENESIS.

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It has been observed by many biblical critics during the last six score years, that the Book of Genesis was not written by the author of the Pentateuch; but rather compiled by him as an introduction to his own writings. Two principal documents, or sources, seem to have been used by Moses in this compilation, embracing accounts of the creation and fall, the deluge, the dispersion of nations, agreeing in a striking manner with the early traditions preserved in sundry profane writers. Those disposed to regard the Book of Genesis with reverence, as the compilation of a divinely illuminated man, look upon these traditions recorded by him as the true versions, giving us the realities; those who wish to disparage the Bible, assume that the first book of Moses is of no more value than any of the traditions of the Etrurians, the Chaldeans, or the earlier Aryans. The latter class seize upon the anthropomorphitic character of many passages in Genesis to show, as they think, that the writers had no higher conceptions of the Deity than those held by any of the pagans. To this the defenders of Moses reply, that we must consider the extreme antiquity of these fragments, that they far antedate Moses, and were addressed originally to a people more rude and uncultivated than the earliest Hebrews. Those people must be addressed in their own language and in their own style of speech, else they would not comprehend the lesson. These fragments in Genesis contain, each, a lesson well worth learning, and which can be conveyed to rude, uncultivated people, even at the present day, in no paraphrase so well and so forcibly as in the biblical form.

This general line of defence and of argument will not avail, unless it be directly and distinctly applied to the individual cases. Let us take up, therefore, the first of those two apparently contradictory accounts of the creation with which the book opens, and see if we can discover the divine lesson which it contains. At some future time we may endeavor to show that the second account is equally wonderful, — that it needs only a generous and appreciative interpretation to show that it was, for the age in which it was given, the best possible form in which the great lessons of our moral freedom and our responsibility to God could possibly have been given. But at present we will confine ourselves to the consideration of the first account, which includes the whole of the first chapter, and ends with the word "created" in the fourth verse of the second chapter; and endeavor to show the correctness of Professor Benjamin Peirce's view, that this chapter contains in itself, just as it stands in our ordinary English translation, demonstrative evidence, first, of its extreme antiquity, secondly, of its absolute perfection of thought and adaptation to man, — thus proving that the original author was divinely illuminated, as well as Moses who made it, in preference to any kindred tradition, the introduction to his books of the law.

The late Professor Agassiz was accustomed to deny that he ever indulged in hypotheses. He thought that he studied the phenomena to be considered until they revealed to him their own meaning, and that, until this revelation was made, he held his mind in entire suspense, without making any tentative hypotheses. Most men will think that Agassiz must have deceived himself in this matter; and that the truth was, that his mind was so clear and so rapid in its action, as to reject the untenable hypotheses as soon as suggested, thus allowing them no time to impress themselves on his memory. To us it seems impossible for a finite mind to proceed in any other way in the interpretation of nature or of literature than by hypotheses and verification, in a manner analogous to that of the good old "rule of false," so unwisely discarded from modern treatises on arithmetic.

We will, therefore, proceed in this manner in our examination of the first chapter of Genesis. It gives us, in some sense, a cosmogony. Shall we suppose that it was intended to be a literal narrative of events? If so, then the second chapter was probably written with the same view; yet the two chapters, taken as narratives of events, are irreconcilably in contradiction to each other. In a compilation made by the chosen lawgiver it is not probable that this would occur. Moreover, as a literal narrative of events, its pertinence as an introduction to the Mosaic law is not very apparent. Dr. Palfrey's hypothesis that everything in the Book of Genesis is inserted because of some valuable bearing upon the religious doctrines or the moral lessons of the Mosaic law, commends itself to our judgment as having an overwhelming probability in its favor. The first thing, therefore, to be looked for, is a revelation of the unity and omnipotence of God. Now this chapter has, above its narrative of events, a religious sublimity, which has made it reverenced wherever read. Jews and Christians have alike clung to it, as worthy to have come from inspiration; heathen critics have praised it, and atheists have been reclaimed by it. About forty years ago, a Chinese boy, in one of the suburbs of Canton, threw away the idols of his family, became an atheist, and ran away to America. In the city of New York he supported himself as a porter, and spent his Sundays in the streets, or on the shores of Hoboken. Curiosity led him one day to look into a church, and he was astonished to find no idols there. He asked, the next day, an explanation of his employer, who replied by simply putting a Bible into his hands. The first chapter of Genesis converted him; he became a Christian, studied and was educated, and returned a Christian teacher to China. He was in the same class with us, in 1839, and we bear joyous testimony to his good sense, ability, and character; and to the genuineness, so far as men could judge, of the conversion wrought in him by this first chapter in Genesis.

This account of the creation is very old. The Hebrew

scholars tell us that the language in it contains marked archaisms, which set its date far antecedent to the age of Solomon, and even to the age of Moses. But without recourse to Hebraists, the English translation testifies emphatically to an extremely early date. For this is an account of the creation — a speculation on the cosmogony; yet it contains no philosophical or technical forms of expression, it betrays nothing of the style of a school; it must have been one of the very first of human speculations on such subjects. The simplest and most sublime message that can be given to man is to announce to us the existence of God. The revelation of his being is a necessary prelude to the promulgation of his law; just as the promulgation of his law necessarily precedes the mission of a Saviour, authorized to announce the terms and arrange the means of forgiveness for sin. Let us, then, make the hypothesis that this is the message of the present chapter; and, in order to put the hypothesis to the severest test, let us make what may be deemed an extreme and extravagant hypothesis, — let us suppose, for a time, that to some very early prophet, like Enoch, the seventh from Adam, the injunction was given to proclaim to mankind the doctrine that God is the absolute Creator of the material universe and all its forces, and that from his will all the tribes of animate beings, including man, sprang to life; let us farther suppose that, in fitting and illuminating the prophet for his task, the whole course of nature from the beginning to the end was unveiled, and all the discoveries and inventions of man, and the speculations of philosophy, down to the present day were shown to him. Now if this hypothesis explains all the facts in the case, and if there is no fact to be found inconsistent with it, then it is fair to infer that so much of the hypothesis as may be found necessary to explain the facts is true; and this inference will be greatly strengthened if the hypothesis extends farther, and explains facts not at first taken into view; also if the imagination in vain seeks any other explanation.

In the first place the prophet would naturally seek to say

that God is the Creator of matter and its forces. But in what terms can he do this? No speculations have as yet discussed the origin of matter; there is no word signifying to create; the arts have not sufficiently advanced to make a distinction between material and product, and there is no word for matter; neither have the sciences reached the state in which the forces of nature were named. Of course, in addressing men the language of men must be used, and the prophet having no words by which to express his ideas, and being forbidden by the necessity of making himself intelligible from coining words, must use periphrases. He endeavors to declare that God was the Creator of matter by saying that God shaped the heavens and the earth, and the earth was waste and empty, and darkness lay over its abysses, and the breath of God brooded over its waters. This representation of the forming of a formless earth is the nearest approach to a declaration of the creation of matter that the language of that early day could make. Then, in order to declare God to be the author of all the forces of nature, and that he holds them under his control, what resource is there but for the prophet to select the most striking of those forces, and to say, God made that, and thus imply that he made all the rest, that would hereafter be discovered. He chooses light, the most striking and wondrous of all to the untutored eye, most wonderful in itself, in its revelations and its suggestions, and declares, God said light be, and light was. The emphasis throughout the whole chapter is upon the divine name; the proposition to be conveyed being not so much that God said, as that it was God who said — a distinction which the rude language could not make. All things sprang from his foreknowledge and his will, — this is the prophet's meaning; it is only the poverty of the uncultivated language of the time which forces him to express himself in this way. God saw that the light was good; that is, he predestined it for its multiform uses in the economy of vegetative and animal life, and in the development of the human intellect. And it was he who separated the light from the darkness; he retained

the control of the force which he had created, and appointed of his foreknowledge the alternations of day and night. In like manner with all the forces of nature afterward to be discovered in scientific research, — heat, electricity, galvanic currents, chemical affinities, actinic rays, whatever they were, — they came at God's command, they were foreseen by him as good, and designed for their uses, and they are retained in his power of guidance. How could the prophet say this to the rude people of his early time better than in those sublime words selected from their unpolished language, to shine, nevertheless, as undimmed brilliants throughout all ages: "God said let there be light, and there was light. And God saw the light that it was good, and God divided the light from the darkness, and God called the light day, and the darkness he called night; and the evening and the morning were the first day."

Every utterance of a mind filled with great thoughts is boldly figurative, and the figures are bold in proportion to the intensity of the speaker's emotion, and to the poverty in words expressive of his thought and feeling of the language which he is using. Thus it appears that our prophet, uttering the grandest truths that can enter a finite mind, and naturally led by his subject, after the delivery of his first proposition, to speak of day and night, is thereby induced to continue in the bold figure of describing the creation as a series of days' works. He does not bring the figure forward offensively, as has been often done by his interpreters, he does not distinctly affirm that the creation was the work of six successive days, but simply divides his description of creation into six periods, by adding at the close of each important division of his subject the poetical refrain, And it was evening and it was morning on that day. These days of creation are not, then, to be considered as periods of time, short or long, any more than if the prophet had said, "In the first place God created matter and its forces, in the second place he made the heavens above," etc., we should consider creation as having been accomplished in six successive portions of

space. The six periods are neither periods of space nor of time, but are logical divisions in the survey of the universe, which the prophet makes in the fulfilment of his mission, — to make a comprehensive and exhaustive statement of the fact that all things, past present and to come, visible and invisible, are the workmanship of God.

Having thus declared, in the first place, God to be the Creator of matter and its forces, the prophet would naturally turn to the heavens, and say that they were the work of the same God. In doing it he must use the Hebrew words: they called it a firmament, which upheld the clouds and stores of rain, and the prophet simply says, God made that firmament; without implying it to be hard and hammered out, any more than we imply that it was heaved up, by calling it heaven. In the third place he would naturally turn again to the earth, and declare its arrangement of seas and continents to be his work, and intelligently designed by him for the use of man; God gathered the seas, and raised the dry land, and saw that it was good. He also gave the earth its fertility, and adapted its grass and herbs and trees to their future uses, and saw that it was good — that the adaptation was perfect. All the work of Ritter and Guyot, all the arguments of the Bridgewater Treatises, and the Graham Lectures, are thus foretold in these brief sentences of the Book of Genesis.

In the fourth place, continues our early prophet, he who made the heavens and the earth adapted their relations to each other — the sun to give light and warmth, and the change of seasons; the moon to light the night; the two to furnish the means of chronology, signs and seasons, days and years. He made, also, the stars, whose uses it will be left for far distant generations to discover; but God saw that it was all good; he foresaw and forecordained the uses that even the stars will have in distant ages. This prophecy has been in our days fulfilled, and the stars have given to man, in the latter half of this nineteenth century after Christ, some of the grandest opportunities for intellectual triumphs that have ever been achieved by human genius.

In the fifth place, he goes on to say, it was God who gave the sea its myriad creatures, that swim in the depths beneath, or on the surface, or fly over its waves; and he saw from the beginning that it was all good — that all these creatures also were adapted to each other, to their place, and to the future uses, corporal and intellectual, of man.

Then, in the sixth place, it was God also who created the tribes of earth, from the least to the greatest, in all their variety, each with its own nature, and capable of perpetuating its kind; and it was he, also, who created man in his own image, capable of understanding and using all these works; it was he who gave us dominion over all things, and pronounced all things very good — perfectly adapted to the future needs of that human race which he had placed on the earth to rule and use it. The long course of history, slowly developing the exceeding richness of man's nature, has, at the same time, developed the divine fulness of this most ancient prophecy, declaring that God in the beginning made a grant of terrestrial sovereignty to man, and pronounced the whole universe adapted to his needs. One knows not which most to admire in our nineteenth century, the mastery which the human intellect is acquiring of the intellectual revelations of nature, or the discovery of new and useful properties in the various forms of matter.

The prophet's task is accomplished; he has made a complete and exhaustive statement of the great truth entrusted to him; he has announced God as the Creator and Controller of matter and its forces; whether in the heavens or on the earth; whether in the earth and seas, or in the plants and animals; whether in the lower animals, or in man, who is created in his Maker's image, and set to have dominion over all things below. The prophet's burden is delivered, and he feels the joy of rest. He adds, therefore, one more thought; God, the Creator of all, has not exhausted his power in his work, he ended voluntarily, — he rested on the seventh day, not because his power was exhausted, but because he chose; and he blessed the seventh day and hallowed it: he enjoys now the sight of the things which he has made.

Interpreted in this way, there is not a phrase in the whole account which militates against the hypothesis that it was uttered from the highest divine inspiration; that is, by a man to whom the whole truth in both science and theology had been revealed; nor is there a phrase which is not explained by the hypothesis that the sole emphasis is to be placed upon the divine name, — that the sole intent of the account is to reveal the one truth that in the beginning God created heaven and earth.

But if the account came thus by a higher inspiration than that of genius, we shall probably find, on examination, that there are other meanings in this passage; a greater wealth of meaning than the prophet himself was aware of. The doctrine of manifold meanings in the scripture is dangerous; and we do not propose to advocate it. The word is written to convey one thought and feeling, and is to be quoted as authority for that one end only. Nevertheless, such is the richness of God's wisdom, that if he inspires a man to speak, that speech will partake somewhat of the marvellous character of the works of nature, which always subserve multiform purposes. It is a great triumph of human ingenuity to contrive, occasionally, a tool that shall combine in itself several uses. But the substances of nature are usually applicable to multifarious purposes; the tools of nature serve many ends; as the tongue is used in tasting, chewing, swallowing, speaking, as a delicate organ of touch, etc. If, therefore, we find that in this account of the creation there are, besides its main meaning, as expounded above, sundry secondary meanings, each obvious, just, and true, it will confirm our faith in the divine inspiration of this pre-Mosaic speech.

But the history of Jewish and Christian literature is full of attempts to draw from this chapter meanings of various kinds, scientific and religious. It is not necessary, and would not be profitable, for us to refer to them in detail. The Jewish doctors found abstruse philosophical meanings in single words and single letters, nay, even in the parts of letters. John Scotus Erigena, the first great light in advance

of the revival of learning, found in it evidence of his grand theory of the division of nature; insisting that the chaos was no chaos, but only a potential cosmos, the ideals of creation intrusted by the Father, for execution, to the Son, who is the Beginning, from whom the Book of Genesis is named In our own day, Arnold Guyot, and others, have sought to find modern geology confirmed here, and Tayler Lewis has given a grand exposition of the Six Days as Time Cycles, arguing chiefly on philological grounds. None of these attempts, to make a secondary meaning become primary, have, in our judgment, succeeded farther than to show the language capable of bearing the secondary meaning, and thus giving an indication of its wonderful richness. The primary meaning attached to it by Peirce, as we have now endeavored to set it forth, being the grandest meaning capable of being put into human speech, and most perfectly according both with the language of the chapter, and with its position as the introduction to the books of the Law, the history of the revelation through Moses, must be accepted as the primary meaning; and the secondary meanings then become of interest only as revealing the inspired character of the account; that it is many sided, like a work of nature, and implies a divine fulness of wisdom, consciously or unconsciously held in the writer's mind.

Two of these secondary meanings are especially worthy of notice, since they do not involve subtilties of thought, or minute attention to words and verbal constructions, but are patent on the face of a translation; the first is the natural suggestion that the six days are not only in the logical order of the prophet's thought, but in the actual chronological order of events; the second is, that the prophet anticipates, and as it were heads off, all the subterfuges of an atheistic spirit.

First, then, the six days, although primarily but six divisions in the prophet's order of thought, actually represent six periods of time. If the mathematicians finally allow the nebular hypothesis to stand, as they seem of late years inclined to do, then there was chaos antecedent to the cosmos. And modern discoveries rapidly tend toward the conclusion that

all the known properties of matter are but modes of motion, so that the first act of creation must necessarily have been that the Spirit of God moved upon the face of the waters. Another discovery of our nineteenth century is, that in every form of matter known to us, there is actually light as well as heat — absolute darkness is as unknown as the absolute zero of heat. It has been so from the beginning; and when creation flashed into being, light was the first created beam. In the very language, therefore, in which this earliest prophet announced God to be the Creator of matter, and of all the forces which govern it, there is, we might say, an implied knowledge of the great physical discoveries of the present day.

Moreover, if the nebular hypothesis is finally established, in spite of the difficulties surrounding certain portions of it, then the heavens were made before the earth; the nebulous mass separated into stars before it divided into planets, and it divided into planets before the planets became cool enough to form into continents and seas and became inhabitable. Here, then, the logical order of the second day is the chronological order of the nebular hypothesis; another instance in which this earliest religious teacher anticipates the boasted discoveries of Herschel and La Place.

Then, if the modern physiologists and geologists are right in their interpretation of the facts of nature, the third division of this chapter was actually next in the order of time. The glowing mass of the earth cooled, the steam was condensed into seas, the upheaval of the continents followed, and the protruding rocks were covered, above and below the water line, with vegetation. And now, also, comes, in its proper order of time, according to modern scientific theory, the relation established between the sun and moon and stars, on one side, and the earth upon the other. The atmosphere cleared, by the condensation of the seas, of its former perpetual clouds, allows the rays of these bodies to come in upon the thin crust of the earth; and the sun's heat becomes, according to Peirce's acute observation on the direction of mountain ranges and coast-lines on the globe, the efficient

cause determining the form of the more fully developed continents, and a perpetual witness that the obliquity of the ecliptic, and the main relations of the solar system, have not been changed since the birth of time,—since God established them on the fourth day of creation.

The fifth and sixth day's work prove, also, according to the modern discoveries of geology, to have been not only natural steps in the progress of the seer's thought, but actual steps in the order of terrestrial development. The sea was first filled with living things, swimming in its depths or flying over it, and afterward came the land animals, and as the crown of the series came man. Nay, even the seventh day's rest stands approved by the results of modern investigation, for not a trace of progress or development, or of the appearance of new forms upon the earth, can be found by the most ardent evolutionist in any rock-records since the appearance of man upon the planet,—a fact which a firm believer in development endeavored once to explain to us, by assuming that the development of all the lower orders was arrested by the presence of man as the head of the series. Sweep man from the planet, he said, and the development would again go on till man were reproduced. We may be excused for thinking the first chapter of Genesis more rational than such a speculation.

Again, this chapter may bear, as another secondary meaning, an interpretation which makes it an answer, in advance, to all the subterfuges of an atheistic or an idolatrous heart. In this light it might almost seem that the prophet had foreseen all the various speculations in which men would indulge concerning the origin of the universe, and had said, "I will anticipate them all, and in my declaration of the being of the one Almighty God, I will show to all those who deny him and turn from him, that I foresaw their errors, and lifted up my voice in the beginning to warn them from the paths that lead to destruction." "The fool hath said in his heart," there is no God,—matter is eternal, all things move on by the forces inherent in the original substance of which all is

composed. Against this oldest form of atheistic speculation comes the clear announcement, "In the beginning God created the heaven and the earth"—created the very material of which they are made, and it was from his command that the forces of nature sprang. The atoms thereof are in his hand to all generations, and they never disobey his word. And the next utterances are against the oldest forms of idolatry. Jupiter, the aether, the air, have been confounded with each other and regarded as the givers of rain and of fruitful seasons, and worshipped with sacrifices of thanksgiving and supplications for continued prosperity. But, says our prophet in advance, it was God who created the firmament, and when the clouds drop fatness, it is at his command; that is, it is of his foreordaining law. Give your thanks to him who can hear and accept the offering; give them not to the unconscious creatures of his power. The earth, also, has been worshipped as the mother of all things; her divine bounty is manifest in the fruits that she pours forth; and, under various names, Terra and Cybele have received thanks and sacrifices. As if foreseeing this future idolatry, the first chapter of Genesis announces that it was God, the Creator of the earth, who gave her her power of bringing forth grass and herb and tree for the service of man, and that it is to him alone that we should give thanks for all these mercies.

Most plausible among the forms of idolatry is the worship of the heavenly host. Men who beheld the sun shining, and the moon walking in brightness, have been secretly enticed, and they have yielded to the persuasion that these were indeed gods. All literature, all mythology, is full of traces left by this worship of the stars of heaven. But in the earliest age of the world is this clear truth uttered, to forbid every future form of the worship of the sun and stars, that it was God who created them and appointed their revolutions in the sky, to mark our days and months and years, our seasons and our hours, for us; that the grand host of heaven is, after all, only one of God's gifts to man.

Other men have been seduced by the mystery of animal

life into the idolatrous worship of bulls and rams, of crocodiles and cats and ibises; and these, too, among nations of the highest of ancient civilizations. And it might seem that this was one of the reasons why the prophet commissioned so long before Moses to proclaim the unity and omnipotence of God, should, foreseeing this foul apostasy, leave it clearly on record that men had been warned against this criminal folly, and had been distinctly taught that the life in these animals is but the gift of the one God, who made all these creatures, not as objects of human worship, but for human uses; that God has given to man complete dominion over all sublunary things — given him a grant to use for his own purposes all things below, animate and inanimate.

But the human heart is deceitful above all things and desperately wicked, who can know it, who shall anticipate all its errors? The crude atheism of the materialist passes away, the various forms of fetichism and idolatry are outgrown, and a highly cultivated, and speculative nation begins to inquire into the foundations of faith. They behold the science of their times, seeking the causes of outward phenomena, gradually lead to the perception of a unity in the forces of nature — to the perception that there is, indeed, but one Cause of the universe. By what name shall they speak of this one Original Cause of all causes? It is evident that no human intellect can understand this Cause, and by searching find out the Almighty, or tell out his wonders. Some, in their contemplation of this insoluble mystery are moved to declare that the First Cause is wholly unknown and unknowable, and that we can predicate of it no attributes whatever; and here they would have us rest. Others would say that the First Cause builds the universe, as the soul of an animal builds its body — it is a principle or power of growth, evolving itself ever in more and more complex forms, by a necessity of its own nature, and herein lies the insoluble mystery presented to our speculations. Others add that this soul of the universe, struggling out of brute matter into vegetable forms, struggling with more energy into the bodies

of the animal kingdom, working ever upward and climbing for something higher, reaches its fullest development in the human frame, and attains self-consciousness first in man's brain. According to this view an honest man is, not only the noblest work of God, but is himself the highest god that has yet come into being. Such is the extreme into which the conceited human intellect runs, in endeavoring to reason concerning the nature of the Deity. In the full-blown state of this egotheism a man becomes conscious of himself as being identical with the First Cause of all things; and may think of himself as causing plants to grow, and rain to fall, of leading the march of the hosts of heaven, and calling the stars to their posts of duty. Strange as this folly may seem to the ears of common sense, it passes for wisdom and high philosophy among some highly cultivated and very acute metaphysical thinkers.

To us it seems sadder than atheism; it just as effectually takes the sun out of heaven, and puts an immoveable rock over the mouth of the sepulchre; it takes all the light of love and joy out of human life, and substitutes this insane self-conceit for filial and fraternal love. We recoil with horror from these conclusions concerning the nature of the universe and the soul, and say, the First Cause is greater than all which he has made; inscrutable in his attributes though he be, those attributes must include power and wisdom and love, for the universe contains them and their manifestations; the world is the embodiment of wisdom and love through power; and the only power we know is the power of will. The answer to which our reason thus attains is simply the truth which the first chapter of Genesis was written to announce, that there is one God, whose fiat is the cause of all that is. But mark how the eye of the prophet who wrote it seems to have pierced through the long ages of idolatry in every form, and through the misty clouds of speculation which have arisen since the seventeenth century, and detected this pernicious outgrowth of the Hegelian philosophy in our time, and uttered, fifty centuries in advance, his protest

against the blasphemous folly; saying, that creation was a voluntary act of God, and that he, of his own pleasure, created man in his own image. We are not the creators of God, the highest conscious beings, and alone in our knowledge of the laws of the universe; but we are the creatures of God, made in his image, gifted with power of thought to apprehend partially his designs; with affections to feel feebly what his love is; with power that we may, in our works of labor and art, rise into awe at his omnipotence. Our powers are faint images of his, not his the weak dilution of ours.

Finally, the announcement of the seventh day's rest may be considered as a caveat against the atheism referred to in the Epistle of James, and drawn from a consideration of the unvarying constancy of the operations of nature. All things seem capable finally of reduction to constant laws of periodic return to their former condition, giving thus a suggestion that the universe may be eternal, and undergoing an eternal series of evolutions from some necessity inherent in its nature. If, in the olden days God created the things that now appear, why do we not see him now creating, at least occasionally, some things. No act of creation has ever been observed; the law of secondary causation is unbroken; each state of the universe flows directly from a previous state; thus it will be forever; thus it has been from eternity; and "there is no occasion for the hypothesis of a Deity." The prophet, foreseeing, apparently, this form of atheism, meets it in advance, by saying, God rested on the seventh day,— he voluntarily ceased from acts of creation, for reasons of his own, which we may not fathom. Yet, as he pronounced creation very good, that is, useful in the highest degree, it is lawful for us to observe that a creation in which miracles are of rare occurrence, and the usual course of events, flowing from strictly invariable laws, is very seldom broken, is far better adapted as a school in which to develop the mind and the soul of man, than a creation could be in which miracle was too frequent. The sublime lessons given by the laws of the universe have been the means of all the development which

has brought the light of the nineteenth century out of the darkness of preceding ages; those laws are not yet exhausted; the progress of discovery is, indeed, more rapid now than ever before; but all scientific study of the order of the physical universe is necessarily based on faith in the inviolability of physical law. The rest of God's seventh day has thus become the source of all the intellectual and spiritual blessings that exalt man above the beasts; while the benefits of the first six days' work are shared by us with the mute creatures.

This then, in brief, is the exposition given by Professor Peirce to the first chapter of Genesis. The hypothesis that it is an express revelation from God, the utterance of truth by a prophet who spake with a wisdom above the reach of human endeavor, is absolutely required to explain the combination of so much knowledge of modern discoveries and modern speculations with the self-evident fact of its extreme antiquity. That antiquity is avouched to us by the language, which although treating of the highest possible themes, is neither poetical nor philosophical, but simply descriptive of phenomena, as they appear to the uneducated eye. That knowledge of human science and human philosophy, in their latest development, is shown by the order of time in which the events are arranged — in making motion the beginning of creation, and light the first effect of motion; in making the earth covered with plants before the sun and planets, of still earlier creation, were visible from its surface; in making animals subsequent to plants; in making man the last comer upon the planet; and in making a distinct denial of every form of pantheistic and of atheistic theory, down to our own day. Its primary object is not to describe the times or places or succession of the acts of creative power, but would simply lead us to bow in grateful adoration before the one God, whose will is the cause of all that is, and whose loving-kindness, looking upon the whole, pronounced it very good — all adapted for beneficent ends to the creatures whom he had made in his own image.

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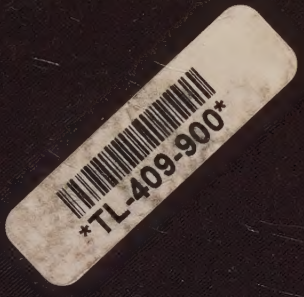
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